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75th Annual Report

**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

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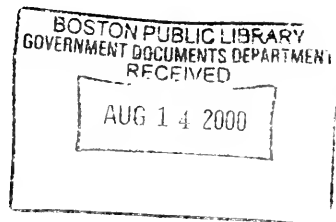
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**U.S.
DEPARTMENT
OF
TRANSPORTATION**

**15th Annual Report
Fiscal Year 1981**



Foreword

The Maritime Administration was transferred from the Department of Commerce to the Department of Transportation on August 6, 1981. Since this was very close to the end of the fiscal year, the Maritime Administration's fiscal year 1981 activities are not covered in this report. However, a full report on the Maritime Administration, beginning with its transfer, will be included in the Department's fiscal year 1982 annual report.

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Summary

Summary

The primary responsibilities of the U.S. Department of Transportation are to assure the coordination and effective administration of federal transportation laws and to develop policies and programs which will result in the provision of fast, safe, and convenient transportation at the lowest possible cost.

The following paragraphs summarize a few of the Department's fiscal year 1981 activities in carrying out those responsibilities. More detailed accounts of these and other Departmental activities are given in the progress reports which follow this summary.

Regulatory Reform

The Staggers Rail Act of 1980, which gave railroads new freedom in ratemaking and service, was signed into law. In addition, the Department worked for greater deregulation of the trucking industry and for total deregulation of the bus industry.

Transportation Safety

U.S. airlines had their safest year in history, and general aviation accidents dropped to a 20 year low. Motor vehicles fatalities declined slightly, as did the fatality rate. Even motorcycle fatalities, which had risen sharply since 1976, showed a significant decline. Train accidents and casualties declined, as did crossing fatalities. Gas pipeline failures were essentially unchanged, but gas pipeline related casualties declined sharply.

Marine Transportation

A deepwater port license was offered to Texas Offshore Port, Inc., and construction of the LOOP deepwater port off Louisiana was completed. As in fiscal year 1980, the Coast Guard responded to more than 73,000 calls for assistance. More than 6,300 people were rescued from life threatening situations, including 519 people aboard a burning vessel in the Gulf of Alaska, and more than 168,000 people were assisted.

Fiscal year 1981 was a record year for Coast Guard drug interdiction. Drug seizures were particularly heavy during the first three months of the fiscal year, when much of the Coast Guard sealift patrol force remained in the Florida area. More than 1800 tons of marijuana were seized, as well as 8.5 million doses of Quaaludes.

Fishery conservation activities resulted in 81 civil penalty actions and the seizure of 15 vessels.

The first two 270-foot Famous class Coast Guard cutters were launched. Eleven more 270-foot cutters were on order.

A total of 50.6 million metric tons of cargo moved through the U.S. portion of the Saint Lawrence Seaway. This was an increase of 2.3 percent over 1980. Most cargo categories showed substantial increases, except grain tonnage, which declined 9 percent. Export coal tonnage rose to a record level.

Aviation

Calendar year 1980 was the safest year in history for U.S. airlines, as only 13 people died in the year's single fatal air carrier accident. In addition, commuter airlines recorded 5 year lows in accident totals, and general aviation accidents dropped to their lowest total in 20 years.

Aircraft hijackings decreased sharply, from 22 in fiscal year 1980 to 6 in fiscal year 1981.

The labor agreement between the Federal Aviation Administration and the Professional Air Traffic Controller Organization expired on March 15, 1981. Negotiations for a new agreement began early in January 1981, and a tentative agreement was reached in June. However, the agreement was rejected by the union members. On August 3, 1981, the union went on strike, and the government began removal action against more than 11,000 strikers. The Federal Aviation Administration immediately instituted flow control procedures, which permitted air traffic to continue, but at about 75 percent of its prestrike level. A program to train new controllers to replace those that had been removed was promptly begun.

Two major additions were made to the enroute air traffic control system during the year. They were an en route minimum safe altitude warning system and an en route arrival metering system. In addition, the last of the backup direct access radar channel systems was commissioned.

A new terminal radar approach control facility was commissioned at New York City. The new facility provided traffic control for all three major airports in the New York metropolitan area.

A total of \$450 million was obligated by the Federal Aviation Administration for airport construction and improvement.

Highways

A total of \$9.0 billion was obligated during fiscal year 1981 under the federal-aid highway program.

By the end of the year, 40,300 miles of the interstate system were in use, and an additional 751 miles were

Summary

under construction. A total of \$3.7 billion was obligated for interstate construction, plus \$250 million for interstate rehabilitation.

The bridge replacement and rehabilitation program continued to expand, and fiscal year 1981 obligations totaled \$938 million.

Federal Highway Administration inspections of commercial motor vehicles increased to 40,000. More than 11,000 vehicles and 4,800 drivers were taken out of service as a result of the inspections.

Traffic deaths declined for the first time since 1974. Fatalities totaled 49,268, compared to slightly over 51,000 casualties in both 1979 and 1980. The traffic fatality rate, which has been essentially stable since 1975, declined slightly.

Drunk driving continued to be the number one highway safety problem, and state and local efforts to reduce drunk driving increased substantially during 1981.

Railroads

Train accidents decreased by 13 percent in calendar year 1980 and rail related casualties decreased by 15 percent. Grade crossing fatalities continued to decline.

Work continued on the northeast corridor improvement project. Passenger service time between Washington, D.C., and New York was reduced by almost 1 hour. Construction contracts totaling more than \$100 million were awarded. Major accomplishments included installation of 60 miles of concrete ties and 20 miles of continuous welded rail and rehabilitation of 13 bridges.

Conrail made progress toward self-sufficiency, and Congress passed legislation providing for sale of Conrail to the private sector.

Amtrak improved both its on-time service and its labor productivity, but its financial condition remained essentially unchanged. Near the end of the fiscal year,

the system was reduced in size by about 10 percent and onboard services were reduced to cut costs.

The Alaska Railroad enjoyed the best year of its history, with total freight tonnage up 93 percent, exceeding the previous record tonnage by 46 percent, and revenues up 52 percent. Most of the increase in freight tonnage was the result of a 350 percent increase in the movement of sand and gravel. The Railroad had its first earned surplus since 1976.

Urban Mass Transportation

The Urban Mass Transportation Administration obligated a total of \$4.1 billion for transit assistance in fiscal year 1981.

A total of \$1.1 billion of the obligated funds was used for operating costs. The remaining \$3 billion was used for capital investments. One major capital investment was the purchase of 1,000 buses by the state of Pennsylvania for use by transit operators throughout the state.

Construction continued on new rapid transit systems in Atlanta, Baltimore, and Miami and on light rail systems in Buffalo and Portland, Oregon.

Twenty interstate withdrawal requests were approved under the interstate transfer program, providing \$614 million for transit projects, including Boston and Chicago rail extensions and the Portland light rail system.

Materials Transportation

Gas pipeline failures increased by about 1 percent in calendar year 1980, but gas pipeline casualties decreased by 28 percent. Liquid pipeline accidents decreased by 12 percent.

Hazardous materials incidents and casualties continued to decline from their calendar year 1978 highs. However, railroad incidents involving hazardous materials continued to increase.

Progress Reports

Office of the Secretary

The Office of the Secretary provides staff and advisory support for the Secretary and supports and coordinates the activities of the various administrations of the Department. In addition, the Office of the Secretary has primary responsibility for carrying out certain programs. This progress report emphasizes those programs.

Transportation Policy

Transportation policy activities during fiscal year 1981 concentrated on applying to transportation the Administration's overall economic and policy priorities:

- Return non-national functions to state and local government;
- Increase reliance on the private sector and market mechanisms;
- Relax or eliminate inefficient or unnecessary federal rules and regulations; and
- Significantly reduce the federal budget and federal taxes.

These policies were translated into specific transportation initiatives in the form of legislative proposals, budgetary proposals, and regulatory review and revision.

Legislation

Legislation was developed and sent to Congress for all major federal transportation programs—federal-aid highways, urban public transportation, aviation, Amtrak, Conrail, the Coast Guard, and ports and waterways. Major elements of the legislation included proposals to:

- Restructure the federal-aid highway program to emphasize completion and preservation of the interstate system;

- Eliminate federal transit operating subsidies and concentrate capital subsidies on preserving existing transit systems;
- Modernize the nation's air traffic control system;
- Reduce subsidies for Amtrak and increase emphasis on productivity and efficiency;
- Return Conrail to the private sector; and
- Institute user fees to recover the costs of certain Coast Guard, aviation, port, and inland waterway programs.

Federalism

The Department developed proposals to carry out the Administration's overall federalism objectives. In the area of federally-funded programs, the Department reviewed and coordinated legislative, budgetary, and regulatory proposals directed toward increasing the authority and responsibility of state and local governments. In the area of interstate commerce, the Department examined the appropriate scope of federal responsibility and established criteria that incorporate increased respect for states' rights.

Cost Recovery Policy

The Department developed a cost recovery policy for federal transportation programs, based on the principle that federal transportation outlays should be financed, wherever possible, through charges levied directly on the user or immediate beneficiary rather than through general taxes levied on the population as a whole. Consistent with this policy, analyses were conducted to initiate or improve user charges for the federal highway program, for certain Coast Guard services, for inland waterways and ports, for aviation services and the airport development program, and for Amtrak. In addition, legislative proposals to carry out the cost recovery policy were developed and sent to Congress for aviation, the Coast Guard, waterways and ports, and Amtrak.

Transportation Regulatory Reform

The Department developed sweeping railroad industry reforms which were incorporated into the Staggers Rail Act of 1980, signed into law on October 14, 1980. The Act greatly increased railroad ratemaking flexibility and provided the railroads with new opportunities to improve service, reduce operating costs, and streamline their physical plants. Railroads responded to the new freedom by doubling their earnings in the first half of 1981 versus the same period of 1980.

The Department was active in truck regulatory proceedings at the Interstate Commerce Commission, pressing for pro-competitive implementation of the Motor Carrier Act of 1980, as well as supporting additional regulatory reforms proposed by the Commission. It was expected that savings to consumers from less truck regulation would be in the billions of dollars annually.

Following the Secretary's testimony before the House Committee on Public Works and Transportation, on May 28, 1981, advocating total deregulation of the bus industry, the Department worked closely with Congress, the Interstate Commerce Commission, the bus industry, and public interest groups to develop bus regulatory reform legislation.

During the year, the Department proposed legislation to accelerate the abolition of the Civil Aeronautics Board. This was consistent with provisions of the Airline Deregulation Act, which called for the phasing-out of airline regulation and abolition of the Board.

Regulatory Relief

An Office of Management and Budget staff report to the Vice President's Task Force on Regulatory Relief estimated that large potential savings could be found through regulatory reviews conducted by the Department, with possible savings from revising or rescinding Departmental rules of about \$1.3 billion in annual costs and \$10.2 billion in one-time costs.

The Department has been in the forefront in the implementation of the President's regulatory relief program, reviewing over 40 of its most costly or controversial regulations. To help assure that the reviews were consistent and complete, a handbook on cost-benefit analysis was prepared for the use of all personnel responsible for such assessments.

Automobile Industry Assessment

In response to directives from the President and Congress, the Department prepared a report on the long term future of the automobile industry. The report was completed in January 1981. Later that month, the President asked the Secretary of Transportation to head a cabinet-level task force on the problems of the automobile industry. Departmental staff supported this task force and, in April, the President announced a program of actions to help the industry.

Ports Legislation

Several legislative proposals dealing with recovery of federal costs for deep-draft navigation were reviewed in light of the Administration's position that ports should reimburse the federal government for 100 percent of all costs for deep-draft navigation, including initial capital construction, as well as operations and maintenance. Analyses were also prepared assessing the impact on ports of such cost recovery legislation on a nationwide scale and of the impact on selected ports, in terms of tonnage and navigation costs. Initial findings indicated that the impact would be small.

A deepwater port license was offered to Texas Off-shore Port, Inc., (TOP) on September 21, 1981. TOP's license application was submitted on December 30, 1980, and the review, including coordination with other federal and state agencies, was completed in record time. TOP had until June 15, 1982, to decide whether or not to accept the license offer.

Construction of the LOOP deepwater port off the Louisiana Coast was completed, and the Department completed its review and approval of LOOP's operations manual. The port was undergoing tests which were to extend into November 1981. During the test period, LOOP was not operating as a common carrier and its proposed tariff had not yet been filed with the Federal Energy Regulatory Commission.

Inland Waterway User Charges

During 1981 significant progress was made in developing a program for cost recovery on the inland navigation system. The Department of Transportation, in cooperation with the Department of Commerce, completed a major analysis of the impacts of waterway user charges on barge operators, water shippers, and the regional economies involved. The study concluded that, for the most part, full cost recovery would not have damaging effects.

Coal Exports

During fiscal year 1981, interest continued in coal exports and in U.S. capabilities for transporting coal from U.S. mines to ports and for transferring coal to ships for delivery to foreign markets. The Department completed, in late 1980, an assessment of the ability of the inland transportation system to efficiently carry expected future levels of coal exports. This analysis was conducted at the request of the Interagency Coal Export Task Force, and the summary report was circulated for public comment early in 1981. A new interagency working group for coal

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exports was established in August 1981, with the goal of identifying and assessing domestic constraints to coal exports which warrant federal action and recommending actions to remove those constraints.

Daylight Savings Time

The Department was called upon by the House and Senate Commerce Committees to present the Administration's position on legislative proposals to extend the six-month daylight saving time period to seven or eight months. New and revised analyses were conducted to update the findings of the Department's 1975 report to Congress relative to the impacts of daylight saving time extension on energy consumption, traffic safety, crime rates, and public opinion. These findings significantly strengthened support for the Administration's position, which recommended expansion of the daylight saving time period to extend from the first Sunday in March to the last Sunday in October. A bill subsequently passed the House, in September 1981, to extend the system to the dates recommended by the Department, and action was pending in the Senate.

International Programs

During fiscal year 1981 the Department continued to expand its international cooperative programs to share the benefits of foreign transportation research. The Department concluded an agreement with Finland for cooperation in icebreaking and winter navigation and arranged for cooperation between the Coast Guard and the Dutch in vessel traffic management. The Department reached an agreement in principle with the People's Republic of China on a transportation protocol; established channels for technical level cooperation on border transportation problems with Mexico and Canada; negotiated arrangements for Soviet and Polish airline participation in the Omega data collection program; and hosted the 13th meeting of the U.S. and Japanese transportation research panel, a forum established at the government level for annual exchange of transportation experience and technology.

As a result of increased importance placed on enhancing export opportunities for American business, the Department expanded its involvement in transport activities related to international trade. The Department identified potential transportation problems that could affect the flow of trade between the United States, Mexico, Canada, Central America, and the Caribbean nations. In connection with the Secretary's role as a member of the interagency trade policy committee, the

Department provided advice in such areas as: the harmonization of automobile standards; the economic effects of reducing the level of official export credit subsidies for aircraft sales; and the effects of the Government Procurement Code on federal transportation programs.

In May 1981 the Department sponsored an international symposium on surface transportation system performance in cooperation with the European Conference of Ministers of Transport, the Organization of Economic Cooperation and Development, and the Transportation Research Board of the National Academy of Sciences. The symposium was attended by 250 people from 17 countries.

International Aviation Policy

The Department played an increasing role in formulating and implementing U.S. international aviation policy. Representatives participated in bilateral civil aviation negotiations with Japan, the Federal Republic of Germany, the United Kingdom, Portugal, Taiwan, Brazil, Poland, and the Scandinavian nations. The Department also participated in multilateral aviation forums, including the European Civil Aviation Conference and the Latin American Civil Air Commission, to discuss proposals for greater pricing flexibility.

Environmental Protection

The Department completed a study of the environmental regulations which apply to transportation projects. The study identified several key areas in which the requirements are duplicative or unduly time consuming without significantly adding to environmental protection. The Secretary submitted a report on the study, with recommended improvements, to the task force on regulatory relief.

Transportation for the Handicapped

On July 20, 1981, the Department issued an interim final regulation amending the mass transit requirements of the Department's regulation on nondiscrimination against handicapped persons (section 504 of the Rehabilitation Act of 1973). The previous rule imposed significant costs on the transit industry and had been opposed by the vast majority of transit operators and some handicapped persons. The new regulation provided greater flexibility to local communities in determining how to apply transit funds to the provision of transportation for handicapped persons.

Air Quality Controls

The Department completed a study of the costs and relative effectiveness of transportation strategies to reduce air pollution. The report compared various transportation control measures and suggested strategies for analysis of local conditions so as to reduce the cost of improving air quality. The Secretary provided a report on the study's findings to the Environmental Protection Agency Administrator for use in developing amendments to the Clean Air Act, and copies were also made available to state and local air quality and transportation agencies.

Legal Assistance

During the year, the Office of the Secretary:

- Provided legal analyses and opinions to the cabinet level task force, which was chaired by the Secretary of Transportation, on issues dealing with international trade, taxes, and antitrust questions for the President's program for the auto industry.
- Provided legal representation to major international air transportation negotiations, including bilateral consultations with Japan and multilateral consultations with the European Civil Aviation Conference on North Atlantic pricing.
- Prepared legal assistance and advice on the transfer of the Maritime Administration to the Department of Transportation.
- Drafted regulations involving Washington National Airport, minority business enterprises, and access of the handicapped to public transportation, and defended the Secretary from challenges to these regulations.
- Developed and presented Departmental positions on transportation industry issues which involved significant legal questions, such as the Union Pacific-Missouri Pacific railroad merger, railroad and motor carrier deregulation, and airline merger cases.
- Provided legal advice and representation pertaining to the issuance of a license for a deepwater port at Freeport, Texas.
- Provided legal opinions and support regarding the formulation of policy concerning the Chrysler Corporation.
- Implemented the priority review of existing transportation regulations to ensure that the regulations were necessary.
- Provided legal advice and representation to the Law of the Sea Negotiations.
- Reviewed and disposed of 223 cases involving the correction of military records for the U.S. Coast Guard.

Intergovernment Affairs

Major accomplishments in intergovernmental affairs during the year included coordination of the Department's participation in the Presidential Federalism Advisory Committee and providing an intergovernmental perspective for Departmental working groups and task forces.

Major public and special interest groups concerned with transportation were contacted, briefed on Administration goals and objectives, and offered assistance in understanding and providing information to their constituents on the Department's programs and budget. The Regional Representatives of the Secretary made similar contacts with state and local officials and Congressional district offices. Many organizations and officials were contacted by the Department for the first time.

A concerted effort was made to meet with state and local officials at forums and meetings.

Community Planning Assistance

Major accomplishments in community planning assistance included:

- Initiation of a study to assess the impacts of current federal program changes on planning and decision making at the state, regional, and local levels, and to determine how the Department can help them adapt to new transportation responsibilities;
- Participation in a major review of the Federal Highway Administration and Urban Mass Transportation Administration urban transportation planning process; and
- Development of innovative planning studies not fundable by modal programs, such as a study of private sector involvement in community contingency planning in Bakersfield, California, and a study of improving transportation in a rural area of Northwest Colorado impacted by recreational travel and the coal industry, and participation in a joint Department of Transportation, Department of Housing and Urban Development, and Department of Energy national community energy management center.

Technology Sharing

The Department's technology sharing program annually responds to over 100,000 requests from state and local governments for technical assistance and information on a wide range of technology related topics.

Recognizing the role that such technical assistance can play in helping state and local governments deal with reduced funding levels, the Office of the Secretary issued guidance to the operating administrations on

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technology sharing activities. Specific emphasis was placed on alternative (non-federal) funding approaches, improving the effectiveness of federal funding where there is an appropriate federal role, and developing partnerships with the private sector.

To encourage better flow and dissemination of information, the technology sharing program put special emphasis on identifying and transferring information on innovative state and local research and transportation activities. This enables like jurisdictions to take advantage of innovative practices of other jurisdictions.

Consumer Liaison

The Department continued to inform the public and seek public participation in agency decision making, as required by Executive Order 12160. Specific activities included development of case studies on successful public involvement in local transportation planning; providing information to consumers on the President's transportation proposals; reviewing significant consumer regulations (e.g., auto safety and accessibility for the handicapped); and examining transportation's role in local economic development.

Small and Disadvantaged Business

The Minority Business Resources Center Program was restructured in order to make it more cost effective.

A new five member Minority Business Resources Center Advisory Committee was sworn in by the Secretary of Transportation on September 29, 1981.

During fiscal year 1981, a total of \$173,072,000 in contracts were awarded to minority firms by the railroads. This amount represented approximately 11 percent of the purchases which were made by those railroads which received funds from the Department. An additional \$5,604,000 in contracts were obtained by minority firms from prime supplier contracts to the railroads.

Outreach seminars were conducted in forty-one of the most heavily populated states to alert minority and women businesses to the Department's financial assistance and direct contracting programs.

The Secretary of Transportation issued a policy statement on September 12, 1981, committing the Department to vigorously support an active and effective program of providing contracting opportunities for minority and small businesses.

Administration

The Office of the Secretary initiated and carried out improved management practices which reduced costs and increased the Department's effectiveness and efficiency. For example, the management of the Department's information resources was improved through the implementation of the Paperwork Reduction Act of 1980. The Department's automatic data processing capability was increased by replacing obsolete computers; and savings of \$2.8 million were realized through space reallocation. In addition, several management studies led to improved Departmental management. One study led to improvement in the organization of the Urban Mass Transportation Administration. The Office of the Secretary also managed the transfer of the Maritime Administration to the Department and provided support to the Maritime Administration during the transition.

Cash Management

The Department implemented and fostered improved cash management practices.

During the year, grant payment procedures were reviewed to ensure that they were consistent with cash management policies. Time was also devoted to a separate but related effort, designed to improve letter-of-credit procedures. On implementation, these procedures were expected to improve the Department's cash position by minimizing premature and excessive grant payments. Additionally, the procedures were expected to assure timely payments to grantees and contractors.

A series of in-house reviews of cash management practices was conducted and the findings were summarized for Departmental evaluation and for use in providing a required report to the Treasury Department. In addition, specialized reports on specific aspects of cash management were furnished to the Treasury Department and the Office of Management and Budget to assist in their evaluation of government-wide cash management practices.

Guidelines were established on timely payments to improve the Department's image with the business sector; on prompt collection of receivables to improve the Department's cash posture; and on internal controls to protect the Department's cash resources against loss or improper use.

Space Reductions

The Department saved \$2.8 million dollars through improved space allocations.

- Space in the Nassif Building was reallocated, so it would be possible to move the Maritime Administration into the building without acquiring additional rental space. This resulted in savings of \$1,800,000 annually in rental charges and enhanced the coordination process between the Maritime Administration and other Department of Transportation elements.
- Plans were developed to reallocate space in the Federal Aviation Administration headquarters building, so that all Federal Aviation Administration personnel could be moved into that building. The Nassif Building space vacated was to be assigned to the Maritime Administration, resulting in savings of \$600,000 annually.
- Library space was reduced by 15,000 square feet, which was assigned to the Maritime Administration. This resulted in savings of \$225,000 in rental costs. The reduction in space was accomplished by purging the library of \$250,000 worth of documents. Most of the documents purged were sent to other libraries, i.e., the Library of Congress, Merchant Marine Academy, etc.
- A reduction of 50,000 square feet of warehouse space resulted in savings of \$209,000 in rental costs. The space reduction was achieved by disposing of obsolete publications and excess property, reducing bulk publications stocks by accelerating the mailing of requests for such publications, and implementing an overall purging process.

Transportation Computer Center

The Transportation Computer Center increased its ability to support the Department's mission with reliable state-of-the-art computing services. Two Amdahl computers and communications front-end processors replaced obsolete and unreliable computers. The operating system for the Amdahl computers was replaced. The computer operations center and the Maritime Administration's computer operations were relocated, with minimum disruption to service. A data base management system implementation plan was developed.

Paperwork Reduction

A single official was appointed and given responsibility for implementation of the Paperwork Reduction Act of 1980, P.L. 96-511, throughout the Department. Early accomplishments included reduction of the Department's public reporting and recordkeeping re-

quirements by 80 million person hours, development of long-range plans for automatic data processing, institution of a planned review of selected information activities, and merging of telecommunications policy with other information management activities.

Implementation of the Act was expected to significantly improve the management of Departmental information resources. Related actions included a review of Departmental data centers for more effective resources sharing, a review of data communications to reduce current costs, establishment of a program for computer technology information transfer, and improvements to the information resources acquisition process to lower the cost of timesharing services and to shorten the overall acquisition time.

Civil Rights

The Department's total civilian employment decreased from 69,938 to 68,627. Minorities represented 14.8 percent of the civilian employment, and women represented 17.4 percent.

The Department measures the effectiveness of its civil rights programs through the use of monthly and quarterly statistical reports, through its monitoring of equal employment opportunity affirmative action plans, and through the conducting of internal equal employment opportunity evaluations. The Department's programs have resulted in a steady increase of minorities and women in the Department's workforce. Special emphasis has been placed on increasing minority and female representation in underrepresented occupations within the Department.

During fiscal year 1981, the Department completed and submitted an affirmative action program accomplishment report to the Equal Employment Opportunity Commission; reviewed and approved affirmative action plans for each of the Administrations within the Department, reviewed and approved forty-three affirmative action plans for the various regions, districts and other field entities. It also developed directives for implementing the performance appraisal and merit pay systems; and designed and implemented a new system for reviewing and monitoring Senior Executive Service position vacancies to assure consideration of minorities in filling these positions.

Inspector General

Fiscal year 1981 was the second full year of operation for the Department's Office of Inspector General. The Office's significant accomplishments and productivity

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gains in the areas of audits, investigations, fraud prevention, and review of legislation and regulations are summarized in the following paragraphs.

A total of 2,250 audit reports were issued during fiscal year 1981, and a total of \$230.9 million of costs were questioned. Recommendations were made concerning the economy, efficiency, and effectiveness of Department of Transportation programs and operations which had a potential to save \$658.1 million. Actual savings statistics as a result of audits were not kept for the first half of the year; but during the last half of the year, audit reports resulted in the recovery of \$190 million. A number of audit findings also pertained to system and control deficiencies which, when corrected, will help to prevent fraud, abuse, or other improprieties. The Inspector General continued to provide audit and advisory support to procurement and contracting officers and provided assistance to Departmental managers and grantees in implementing audit requirements prescribed in Attachment P to the Office of Management and Budget's Circular A-102.

During fiscal year 1981, 237 investigations cases were opened and 208 were closed. Judicial dispositions included 51 convictions, with fines of \$3,261,100, court-ordered restitutions of \$22,066, 12.9 years of imprisonment (6.6 years suspended), and 23 years of probation. Administrative actions included debarments of 10 construction companies or company officials and 37 personnel actions, such as suspensions, reprimands, restitutions, or resignations. In addition to court-ordered fines and restitutions, cost savings or avoidance of \$824,985 was realized as a result of investigative efforts.

Six vulnerability assessments were completed during the year, and a new program of joint audit and investigative fraud prevention and detection surveys was established. Fraud awareness efforts included: preparing a letter, signed by the Secretary, providing guidance on suspension and debarment of contractors; briefing the Secretary and senior Departmental staff on the complaint center; issuing audit reports on imprest funds, outlining conditions with a potential for fraud and abuse; participating as a member of the Administrative Remedies and Incentives Committee of the President's Council on Integrity and Efficiency; preparing a Departmental Order covering administrative remedies available to management in cases that are not prosecuted; distributing over 5,000 copies of an Office of Inspector General brochure; and advising the Department's grantee organizations on the application of the previously issued procurement fraud indicators package. Action was taken on 350 complaints received by the complaint center.

In a continuing effort to better utilize resources, the Inspector General reviewed only the proposed legislation which directly involved the Office of Inspector General or which significantly affected Departmental programs and operations. Some examples of legislation and regulations on which significant comments were made were the Amtrak Improvement Act of 1981, the Federal-Aid Highway Act of 1981, the Financial Integrity Act of 1981, The Federal Employees Compensation Act Amendments of 1981, The Debt Collection Act of 1981, and Amendments to the Urban Mass Transportation Act of 1964.

United States Coast Guard

The United States Coast Guard is responsible for enforcing or assisting in the enforcement of federal laws on the high seas and waters subject to the jurisdiction of the U.S. These laws govern navigation, shipping, and other maritime operations and the related protection of life and property. The Coast Guard also provides maritime search and rescue facilities. Other responsibilities include: promoting the safety of merchant vessels; conducting oceanographic research; furnishing icebreaking services; and developing, installing, maintaining, and operating maritime aids to navigation. A further responsibility is to be ready to function as a specialized part of the U.S. Navy in time of war or national emergency.

The Coast Guard operates a fleet of 245 cutters, 158 aircraft, and more than 2,000 boats. It also maintains more than 48,000 navigational aids.

Coast Guard missions are carried out by 39,760 military and 5,618 civilian personnel. They are supported by the 11,700 member Coast Guard Reserve and by 40,761 civilian volunteers in the Coast Guard Auxiliary.

International Affairs

The Coast Guard's international involvement reflects their domestic role as well as a focus on world maritime resources. Long recognized as a world leader in maritime affairs, the Coast Guard has attracted the attention of other nations interested in maritime law enforcement or marine safety matters. Foreign governments wanting to acquire or improve their own maritime forces look to the Coast Guard as a model and for assistance.

The number of foreign nationals receiving training at Coast Guard schools and the requests for information

coming from abroad showed a steady increase. Coast Guard cutters were increasingly requested to operate with allied navies and to make foreign port calls to promote our national objectives and policies. Coast Guard personnel led U.S. delegations to meetings of technical committees of the Intergovernmental Maritime Consultative Organization (IMCO) and actively participated in numerous other international conferences. A bilateral agreement on icebreaker technology was negotiated between the U.S. and Finland and a Coast Guard officer was assigned to Saudi Arabia to serve as a maritime safety advisor to the Ministry of Communications.

Search and Rescue

The search and rescue (SAR) program continues to be the mission that the public most identifies with the Coast Guard. The objective of the SAR program is to save lives and to prevent personal injury and property damage in the maritime regions of the United States. No incident in recent history better demonstrated the importance of this objective and the Coast Guard's ability to meet it than the saving of *all* 519 people aboard the burning M/V PRINSENDAM in the Gulf of Alaska in October 1980. A massive maritime tragedy was averted by the quick action and professionalism of the Coast Guard's SAR forces.

The SAR program uses approximately one-fourth of the Coast Guard's operating funds and personnel resources. During fiscal year 1981, the Coast Guard responded to over 73,000 calls for assistance, and, with the aid of the Coast Guard Auxiliary, rescued over 6,300 people from life threatening situations and assisted an additional 168,000 people who were in danger. The estimated value of the property saved exceeded \$900 million.

During fiscal year 1981, the Coast Guard coordinated revision of the 1969 National Search and Rescue Plan with seven executive agencies through the Inter-agency Committee on Search and Rescue. The purpose of this plan is to continue, by interagency agreement, the effective use of all available facilities for search and rescue missions.

Aliens and Refugees

The start of fiscal year 1981 saw a large contingency force of Coast Guard units patrolling off southern Florida in the event the Cuban sealift resumed. At the direction of the President, this force remained in place until mid-December, when it was allowed to disperse, with the understanding that the Coast Guard would re-

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spond rapidly to any renewal of the sealift. The sealift caused a maintenance and training backlog which would last through fiscal year 1982.

During fiscal year 1981, the Coast Guard intercepted or provided search and rescue assistance to 3,330 Haitians, 156 Colombians, 52 Cubans, and small numbers of other migrants. As a result of a U.S. policy review of the illegal flow of Haitian nationals into this country, the Coast Guard was expected to take a more active role in fiscal year 1982 to interdict this flow.

Drug Interdiction

Fiscal year 1981 was a record year for Coast Guard drug enforcement efforts with 3,707,207 pounds of marijuana seized. Fifty-eight percent of the marijuana was seized during the first quarter, when a sizeable force of Coast Guard units was retained in the Florida area as a Cuban refugee contingency force. The Coast Guard also seized 8.5 million doses of Quaaludes, an 80 percent increase over 1980, indicative of the continued increase in the illicit methaqualone industry in Colombia and other countries. The estimated value of all contraband confiscated by the Coast Guard was \$2.7 billion, which equaled the combined total of 1979 and 1980 contraband seizures. Interdiction activity was heaviest in the Florida and Caribbean area, but major seizures took place along the entire coast line.

Fisheries Law Enforcement

Coast Guard fishery conservation activities during the year included: boarding 1873 vessels (1,352 domestic, 521 foreign); issuing 70 citations (28 domestic, 42 foreign); and initiating 81 penalty actions (37 domestic, 44 foreign). Fifteen foreign vessels were seized. By the end of the year, five of the seizure cases had been decided, resulting in the payment of \$1,002,500 in penalties. Enforcement of domestic regulations, developed by regional fishery management councils, required 55 percent of the Coast Guard's fisheries law enforcement effort. The increase in enforcement activities was particularly large in the Gulf of Mexico, with the implementation of the shrimp fishery management plan.

In addition to its fisheries management responsibilities, the Coast Guard enforced statutes regarding marine mammals, endangered species, and marine sanctuaries. Conflicts between fishing groups, domestic or foreign, required considerable Coast Guard attention, including on-scene intercessions and investigations and managing fixed gear reporting systems.

Polar Class Icebreakers

Polar Class icebreaker operations continued to show encouraging results. POLAR STAR broke the channel into McMurdo Station in routine fashion, with tremendous time savings. POLAR SEA made an unprecedented winter transit to Point Barrow, Alaska, in February, although mechanical difficulties not related to ice conditions caused a disruption in planned operations. POLAR STAR routinely completed a summer mission in the western Arctic. Installation of rebuilt propeller control rods in 1982 should further enhance operational reliability.

Arctic Marine Transportation System

The Coast Guard continued to monitor the development of Arctic Alaskan and Canadian resources, which strongly point toward year-round marine transportation in the Arctic. Coast Guard membership in the Inter-agency Arctic Policy Group continued, with significant input provided to the Arctic marine transportation policy paper.

Aids to Navigation

Tests of Loran-C radio navigation equipment on the St. Marys River and in Delaware Bay demonstrated the in-harbor capability of Loran-C for precision piloting during periods of low visibility and when buoys are submerged by ice. Simulator and precision tracking experiments helped to produce a manual for the design of visual aids to navigation systems. Work began that will relate radar and Loran-C piloting systems to navigation aid selection and distribution. Comprehensive studies of the needs of mariners at Galveston, on the Lower Mississippi below Baton Rouge, and at Tampa were nearly complete, with some navigation aid changes already made. The buoy tender COWSLIP was repurchased as a replacement for the Cutter BLACKTHORN, which sank after a collision in Tampa Bay. An aids to navigation team was established in New York City, and nine lighthouses were automated during the year.

The Coast Guard tested, received, and accepted the solar power systems for six Florida Keys reef lights. Solar photovoltaic power systems replaced submarine cables on two New England lights. Development was begun on a prototype navigation aid control and monitor system to permit completion of the lighthouse unmanned program. A one year test of green buoys was completed. Public response was favorable to conversion to green as port hand color when the International Association of Lighthouse Authorities buoyage system is adopted.

Several other projects were started during the fiscal year. The rewriting of the federal radionavigation plan by an interagency navigation working group began during 1981, with completion scheduled for 1982. Omega radio navigation coverage and accuracy in the North Pacific was validated, while signal information was collected for South Atlantic validation. Extensive modernization of the Coast Guard's marine radiobeacon system was begun, involving the replacement of obsolete vacuum-tube equipment with solid-state electronics.

Bridges

During fiscal year 1981, 181 permits and 31 drawbridge regulations were issued. Pursuant to the Truman-Hobbs Act, an Order to Alter was issued on the Burlington Northern, Inc. railroad bridge across the Willamette River in Portland, Oregon. Construction was completed on the Milwaukee, St. Paul and Pacific Railroad bridge across the Mississippi River at Hastings, Minnesota. A study was completed entitled "Laboratory Model Testing of Bridge Protective Systems and Devices." During fiscal year 1981, two bridge permits were issued under the International Bridge Act of 1972—one at Pharr, Texas, across the Rio Grande River and one at Madawaska, Maine, across the St. John River.

Commercial Vessel Safety

As a result of P.L. 96-594, the Vessel Documentation Act of 1981, the Coast Guard initiated a revision of its regulations pertaining to vessel documentation. The revision updated and simplified the archaic language of the regulations and eliminated unnecessary reporting requirements, thereby reducing the burden on the public.

The Coast Guard initiated regulations on ocean thermal energy conversion (OTEC) facilities and plantships, as a result of P.L. 96-320, the OTEC Act of 1980. These regulations relate to specific provisions of the law involving broad areas of marine environmental protection and safety of life and property at sea.

The Coast Guard and the U.S. Geological Survey signed a Memorandum of Understanding on December 18, 1980, which addressed the safety of activities and facilities involved in the exploration, development, and production of mineral resources on the outer continental shelf. The understanding will avoid duplication of effort and result in coordinated and less burdensome regulations.

The Coast Guard and the National Transportation Safety Board (NTSB) signed a Memorandum of Understanding on September 28, 1981, which established the NTSB as the sole safety-oriented federal investigatory agency for maritime collisions between Coast Guard vessels and non-public vessels that involve at least one fatality or \$75,000 in property damage. The Memorandum of Understanding also established provisions for the NTSB to act as the sole investigatory body for other accidents that involve other public vessels or the Coast Guard's performance of safety related functions (e.g. search and rescue, marine inspection, etc.).

The Coast Guard and the American Bureau of Shipping (ABS) signed a Memorandum of Understanding on June 9, 1981, concerning plan review and inspection for new vessel construction. The Memorandum of Understanding provides for Coast Guard acceptance of ABS plan review and inspection of certain items on vessels under construction which are to be classed by ABS and certificated by the Coast Guard. These items include hull structure of conventional ships and barges, inert gas systems, crude oil washing systems, and certain piping systems.

Through its participation in the Intergovernmental Maritime Consultative Organization (IMCO), the Coast Guard was successful in negotiating a proposed IMCO resolution which recommended guidelines for establishing vessel manning scales. This recommendation, if accepted by the IMCO Assembly, will provide a tool for both developed and developing nations to use to compare vessel manning scales.

Nearly 200 penalty appeals cases arising from the Cuban sealift operation of 1980 were processed at headquarters. The civil penalties resulted from a multitude of safety and pollution violations by vessels involved in the "freedom flotilla". Several hundred cases were still pending at the Seventh District office in Miami and appeals of most of these were expected.

Recreational Boating Safety

The Coast Guard continued its efforts to reduce fatalities, injuries, and property damage among the fourteen million boats and sixty-three million people who go boating annually.

The Coast Guard has continued to encourage state governments to assume greater responsibility for boating safety through the development and enforcement of consistent regulations, supplemented by education and accident recovery programs. States and local governments have been called upon to assume most on-

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water boating safety law enforcement functions, as federal resources are applied elsewhere.

Fiscal year 1981 rulemaking efforts emphasized the review of existing regulations to ensure that they were effective and economically reasonable. All program regulations were reviewed by the boating industry, state authorities, and affected public organizations, through the National Boating Safety Advisory Council, which found that about five percent of the regulatory content was unnecessary or required modification.

During the year, the Coast Guard monitored 222 recall campaigns undertaken by manufacturers to correct potential hazards or to modify boats which failed to comply with applicable federal safety standards. These campaigns affected a potential total of 530,995 boats. Preliminary tests conducted by an independent facility under contract to the Coast Guard indicated that 80 of 123 types of production boats tested failed to meet one or more of the applicable federal standards.

The boating safety program was aided greatly by the support of the Coast Guard Auxiliary. During the year, Auxiliary members, who are private citizens, conducted safety courses for over 430,000 people and made courtesy examinations of over 300,000 boats. The Auxiliary was credited with saving 1,949 lives, assisting over 58,000 people, and saving many boats and other property.

Waterways Management Program

The Puget Sound Vessel Traffic Service radar expansion project was completed in December 1980 and declared operational in February 1981.

The Inland Navigation Rules Act of 1980 (P.L. 96-591) was signed into law on December 24, 1980. The new rules were to go into effect on all U.S. inland waterways on December 24, 1981, except for the Great Lakes, where an April 1, 1982, effective date was anticipated.

The port access route study mandated by the Ports and Waterways Safety Act was completed. The results from the Third, Seventh, and Eighth Coast Guard Districts were published in the Federal Register. The remaining study areas were to be published by mid-1982.

Ports and Environmental Safety Program

A study of the relationship of ship size to spill risk was completed, and full scale tug-tanker tests were conducted in Puget Sound. These studies were to provide the critical quantitative data to support a decision on tanker size and operations within Puget Sound.

A deepwater port license was awarded to Texas Offshore Port, Inc. on September 21, 1981, after a detailed license application review process which included preparation of an environmental impact statement and economic comparison with the Port of Galveston.

The Deepwater Port Liability Fund was activated in May 1981, with the start of crude oil transfer operations at the Louisiana Offshore Oil Port (LOOP), the nation's first operational deepwater port facility. A terrorist response plan was developed for LOOP and a final review of LOOP's operations manual was completed.

A \$17 million escrow was achieved in September 1981 in the Offshore Oil Pollution Compensation Fund activities, from fees collected from offshore industries and outer continental shelf oil production.

The proposed ocean dumping surveillance system was determined to be infeasible, based on comments received from the electronics industry and other public comment. The Notice of Proposed Rulemaking was withdrawn on April 30, 1981.

Revised special interest vessel boarding procedures were developed in response to National Security Council guidance. These procedures will allow a more flexible scheduling of boardings of communist country flag vessels in the future.

Coast Guard User Fees

In March 1981, as part of the President's cost reduction program, a legislative proposal authorizing the charging of fees to the recipients of Coast Guard services was forwarded to the Congress. This proposal was being redrawn following the solicitation of views from marine industry and recreational boating representatives and a modified proposal was to be submitted to Congress early in 1982.

Cutter Construction and Maintenance

The first two cutters of the 270-foot Famous Class (BEAR and TAMPA) were launched at Tacoma Boatbuilding Co., which is building a total of four Famous Class cutters. A contract to construct nine additional 270's was awarded to R. E. Derecktor Inc. of Rhode Island. The contract award of about \$350 million was the largest ever made by the Coast Guard. Delivery of the first cutter under this contract is expected in 1985. The 140-foot icebreaking tug MORROW BAY was delivered. New boat construction consisted of six 55-foot aids to navigation boats and eleven 41-foot utility boats. The contract drawings and specifications for a dual draft icebreaker were completed. The renovation of four

95-foot patrol boats was completed and Phase II of the EAGLE renovation was started. Improvements in fleet supply and maintenance logistics continued.

Shore Construction

Major shore projects completed during fiscal year 1981 included the Kodiak, Alaska, powerhouse addition; the Charleston, South Carolina, pier; the Quillayute River, Washington, station building; the Chetco River, Oregon, bachelor enlisted quarters; and the relocation of Support Center Seattle to Piers 36 and 37. Major shore construction which was begun or continued included: the New York, New York, bachelor enlisted quarters and bachelor officers quarters; the Cape May, New Jersey, logistics support services building; and the Yaquina Bay, Oregon, station expansion.

Marine environmental protection procurements included replacement of mobile command posts for the national strike force and the air deliverable anti-pollution transfer system prime mover, which provides hydraulic power to portable equipment. Delivery of a submersible system for the pumping of chemicals from stricken vessels was completed.

Aircraft Procurement and Improvement

Final certification of the Medium Range Surveillance Aircraft (HU-25A) ATF3-6 engine at a thrust level to meet contract requirements was issued. Delivery of the first fully certified HU-25A was expected in November 1981.

Color multi-function radar systems, AN/APN-215 (V), were installed in all six Alaskan HH-3F helicopters by Coast Guard Aircraft Repair and Supply Center field teams. The Collins test set (CTS-81), which will permit testing of the avionics on both the HU-25A and the HH-65A helicopter, was completed. A sole-source contract was awarded to Lockheed-Georgia Co., to develop the necessary engineering change proposals for the start of a C-130 improvement program in fiscal year 1983.

Research and Development

Several Coast Guard research and development projects focused on marine pollution, including projects to develop hazardous chemical response equipment and procedures and techniques to prevent or reduce the discharge of hazardous substances from stricken vessels. Other projects addressed reduction in damage to the environment and the cargo itself and collecting

better information for response and evacuation strategies.

Other research and development projects explored aspects of marine safety. Essentially completed was the development of a comprehensive marine safety information system for recording merchant vessel inspections and boardings, as well as the design characteristics of virtually every type of merchant vessel. Efforts continued in the assessment and demonstration of all-weather precision navigation systems and the development of simulator techniques to assist in buoy design and performance evaluation.

Procedures and systems were being developed to improve search and rescue effectiveness. For instance, a forward looking infrared sensor, while still undergoing evaluation, allowed a Coast Guard helicopter crew to spot two survivors in a small boat, possibly saving their lives. Plans and equipment were readied to evaluate the search and rescue satellite scheduled for launch in early spring 1982. In an evaluation of "biological sensors", search and rescue units found that using pigeons for spotting targets improves search effectiveness.

Certain research projects were pursuing solutions for several Coast Guard missions concurrently. These "multi-mission" efforts included—lighter-than-air patrol aircraft, advanced marine vehicles, command and control systems, energy saving technology applications, shore-based VHF-FM direction finding, and assessments and forecasts of technological trends.

Coast Guard Reserve

During fiscal year 1981, the Coast Guard Reserve continued to emphasize improved mobilization readiness. Strength and training requirements were validated as mobilization plans were rewritten at all levels to reflect the latest wartime assignments. This intensive planning activity fostered a close working relationship between active duty and reserve personnel. A formal mobilization exercise program was established in the middle of the year to test these plans and the personnel who will carry them out. During fiscal year 1980, 400 Coast Guard reservists participated in six exercises nationwide. Under the new program, participation increased to 1,150 reservists and 300 active duty personnel in 15 exercises during fiscal year 1981. Plans for fiscal year 1982 and beyond call for a minimum of 13 exercises involving 2,900 reservists and many of their active duty counterparts.

During fiscal year 1981, the Coast Guard Reserve was consistently at or above its authorized strength of

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11,700, allowing a focus on improvements in individual qualifications to match specific mobilization needs. Augmentation of active duty commands continued to be a vital part of the mobilization training program, with increased emphasis on those areas directly related to wartime mission requirements.

Military Readiness

Coast Guard forces represent a significant percentage of the total forces dedicated to the task of sea control and to the security of our ports and harbors during military deployments. During the year, the Coast Guard continued its participation in the Defense Department's command post exercise and its worldwide military command and control system. In addition, 44 Coast Guard cutter crews underwent refresher training at Navy training facilities; and 13 Coast Guard high endurance cutters engaged in joint operations with other naval forces during fleet exercises. The highlight of the year's joint operations was the Coast Guard's participation in Ocean Venture/Ocean Safari '81 and Unitas XXII, the largest allied deployment since World War II.

Reorganizations

A new Office of Command, Control and Communications was established on May 20, 1981, through the consolidation of telecommunications, electronics engineering, and information technology activities at Coast Guard Headquarters. This action, taken in the general spirit of the Paperwork Reduction Act of 1980, improved the Coast Guard's capability to use the latest information management technology while maintaining support for traditional systems and performance requirements.

Health Services

The Coast Guard's health services support program has not been adversely affected by the closure of Public Health Service hospitals and clinics. Although the closures will require a 15 percent shift in total Coast Guard health care workload, the availability of care from alternative sources will minimize the impact.

Officer Performance Management System

The Coast Guard has undertaken a major revision of its officer fitness reporting system. The new system, called the officer performance management system, combines performance appraisal with officer development, through the use of two separate though mutually supporting forms used at different times during the six

month reporting period. Through increased communication between individual officers and their supervisors, and the use of a highly structured appraisal report narrative, the system will provide more descriptive performance information for personnel management decisions. The new system was scheduled for implementation on January 1, 1982.

Training and Education

The administrative efficiency of the Coast Guard's training system was significantly improved by automating the maintenance and production of Class "A" School waiting lists. The up-to-date information provided by this system has enhanced the Coast Guard's ability to manage its nonrated enlisted personnel systems.

Recruiting

Minority enlistments were 19.7 percent, while the goal was 18 percent. This was the highest minority enlistment rate ever. The good recruiting climate also gave the Coast Guard the opportunity to raise standards for enlistment, which will aid significantly in improving the quality of recruits.

Enlisted Personnel

The emphasis that the Coast Guard has placed on the "quality of life" for its people has begun to pay dividends in the form of higher retention rates for enlisted personnel. Reenlistment rates for the twelve-month period ending July 31, 1981, were 42 percent for first term reenlistees and 87 percent for subsequent reenlistees. However, it will be necessary to sustain these high retention rates over the next three years in order to rebuild the number of experienced petty officers to acceptable levels.

Fiscal year 1981 saw the continuation of a lengthening-of-tours project begun in fiscal year 1980. During the year, the standard sea tour was increased from two years to three years on two additional classes of cutters, bringing the total number of ships with three-year tour lengths to 119. The ultimate goal of a standard 4-year shore tour for all personnel E-6 and above was also announced.

Civil Rights

Military. During fiscal year 1981, a greater emphasis was placed on resolving complaints via the military chain of command and emphasizing a "home ownership" of the civil rights program at the district

and unit levels. The Military Civil Rights Manual was revised to support this new emphasis. A policy and a training program were developed for field units to deal with the problem of sexual harassment. New internal procedures for formal investigations of complaints were expected to cut the length of investigations by at least one-half. There were four formal complaints of discrimination received during the year. This was down 50 percent from recent years and was attributed to more experienced field counselors and efforts by field commanders to resolve problems at the unit level. On September 30, 1981, there were two active cases and three cases at the hearing stage (of which one was from a previous year).

Civilian. During fiscal year 1981, four in-depth evaluations of district and headquarters unit civilian equal employment opportunity programs were con-

ducted. Two others were canceled due to a reduction in travel funds.

The Coast Guard affirmative action program resulted in the placement of 67 minorities and females in 121 targeted vacancies. The placement rate was 55.3 percent, up 10 percent from the previous year. Affirmative active program plans were automated, significantly reducing paperwork.

Special attention was given to the promotion of the Hispanic employment program, including an Academy orientation visit for high school counselors from predominantly Hispanic areas of Miami and New York.

At the beginning of fiscal year 1981, the Coast Guard had 40 active civilian equal employment opportunity complaints on hand. During the year, 17 additional complaints were filed and twenty-nine cases were closed, leaving 28 active civilian complaints on September 30, 1981.

Federal Aviation Administration

The basic mission of the Federal Aviation Administration (FAA) is to promote aviation safety, operate and maintain a common system of air navigation and air traffic control for civil and military aviation, and foster the growth of civil aeronautics both at home and abroad.

Aviation Safety

The Safety Record. Based on safety figures compiled and issued on a calendar year basis by the National Transportation Safety Board (NTSB), 1980 was the safest year in history for U.S. certificated route and supplemental airlines. Scheduled jet transport passenger operations enjoyed a perfect year; not a single scheduled airline jet was involved in a fatal crash during 1980. Only one scheduled air carrier aircraft, a twin-engine turboprop, was lost in a fatal crash, killing 13 people on board. This was the lowest number of fatalities in scheduled and supplemental U.S. air carrier operations since 1927, when the keeping of air carrier safety statistics began. U.S. supplemental air carriers in passenger operations recorded their tenth consecutive year without a fatal accident. U.S. certificated route air carriers in scheduled international passenger service experienced their sixth year in the last ten without a fatal accident.

Commuter airlines recorded five-year lows in accident totals and rates. General aviation had a mixed year. The number of accidents dropped below the 4,000 mark for the first time in 20 years, but this was because general aviation activity decreased, since both the accident and fatal accident rates rose slightly.

Regulatory Actions: FAA took the following significant regulatory actions during fiscal year 1981:

- Withdrew six notices of proposed rulemaking. Some of the proposed rules were withdrawn after the agency

determined that their costs outweighed their benefits; others were withdrawn in order to develop proposals that were less complex and less burdensome.

- Issued a new federal aviation regulation, FAR Part 125, which established a uniform set of certification and operating rules for large airplanes capable of carrying 20 or more passengers or a maximum payload of 6,000 pounds or more and used for any purpose other than common carriage. The new rule significantly upgraded the level of safety required of such airplanes.

- Established special rules for the storage aboard aircraft of flexible canes used by blind passengers. The rules prescribed methods for storing the canes safely within reach of blind passengers and required certificate holders to make available to the public their procedures relating to the carriage of passengers who might need assistance during an evacuation.

- Issued a new rule permitting the issuance of special export certificates of airworthiness for restricted category aircraft. An exporter may now obtain a certificate for such an aircraft under the same rules that apply to aircraft with standard airworthiness certificates, thereby facilitating foreign sale demonstration tours and enhancing the potential for increased sales aboard.

Civil Aviation Security. During fiscal year 1981, five U.S. air carrier and one U.S. general aviation aircraft were hijacked, compared to 22 air carrier and one general aviation aircraft during the previous fiscal year—a decrease of 74 percent. In large measure, the decrease reflected the fact that the cycle of hijackings by Cuban refugees seeking to return to Cuba, a feature of hijackings during fiscal year 1980, had pretty well run its course.

On September 11, 1981, a new regulation (FAR Part 108), restructuring airline security requirements, went into effect. The rule levied airline security requirements according to the perceived threat to which different types of operations and sizes of aircraft are exposed and established security safeguards appropriate to the various types of commercial passenger operations.

In another development, a government-industry task force developed a new concept for the deployment of law enforcement officers at airports that took into consideration the total persons screened, the criticality of the airport, and the perceived threat. The concept requires the identification of multilevel safeguards appropriate to the various categories of airports, permits the modification of airport and airline security programs upon FAA approval, provides for the strengthening of screening points by adding security supervisors and

special communications equipment, and provides flexibility in the provision of police support. Implementing this program could result in annual cost savings in excess of \$45 million.

Other Safety Developments. Other significant safety developments included:

- A decision by a Presidential task force on aircraft crew complement, handed down in July, that the DC-9-80 had been appropriately type-certificated by the FAA and that it could be flown safely by a cockpit crew of two pilots.
- The holding of six workshops to establish, with the aviation community, a common perspective on human-factor problems. From the issues and recommendations presented at the workshops, FAA was developing requirements for future human factors research.
- Reaching a temporary agreement with the Office of Personnel Management (OPM) on qualification standards for visual acuity and color vision for applicants for initial employment as air traffic controllers. Under the agreement, air traffic control applicants not meeting OPM visual acuity and color vision standards will have their medical clearances suspended pending determination of medical standards; meanwhile, OPM will no longer block certificates of otherwise eligible candidates. In a second agreement, OPM assigned an industrial psychologist to perform a job analysis with respect to color vision on each subvocation in the air traffic control series. The analysis should yield sufficient information to develop a comprehensive standard.
- The continuation of research and development on an antimisting kerosene fuel additive that inhibits the formation of a highly flammable fuel mist during an impact-survivable crash. This research is of great significance, given the fact that fuel-fed fires account for about 30 percent of the fatalities in U.S. turbine-powered transport aircraft.
- Issuing a final general notice ending the special inspection required for Reynolds Metals aluminum plate produced prior to November 7, 1980. In May 1979, a Fokker Company workman in Holland discovered a soft spot in aluminum plate manufactured by Reynolds, which meant that Reynolds plate was understrength. Word of the soft spot spread rapidly, and FAA, NASA, and the Defense Department established a special engineering task group to act as the focal point between Reynolds and interested federal agencies. In August 1979, FAA issued a general notice setting forth an inspection program to be conducted by FAA production-

approval holders and their suppliers until Reynolds could correct the problems. Early in fiscal year 1981, Reynolds determined that the problem was in a faulty heat-treat line, and the joint task group was disbanded in December 1980.

Air Navigation and Air Traffic Control

The PATCO Strike. The fiscal year opened with the Professional Air Traffic Controller Organization and FAA preparing to renegotiate their labor agreement, which was due to expire on March 15, 1981. The union submitted its bargaining proposals to FAA in early January 1981, and negotiations began the following month. Negotiations continued until June 22, when a tentative agreement was reached. Although the union's president approved the agreement and called it fair and equitable, he and PATCO's other national officers advised the union's members to reject it, which they did. The final count, showing approximately 95 percent of the members opposed to the contract, was completed on July 28; on Friday, July 31, at a press conference in Washington, the union announced that a nationwide controller's strike would begin on Monday, August 3, unless the government met PATCO's demands.

A round of meetings over the weekend with a federal mediator followed. The union rejected the final concessions the government was willing to make, and the strike began with the morning shift on August 3. Later that morning, President Reagan, appearing on national television, ordered the strikers to return to work. He reminded them that they had taken an oath not to strike against the government and gave them 48 hours, or until Wednesday, August 5, to return to their jobs or be fired. The President's ultimatum was ignored by 11,438 strikers, and they were fired by FAA.

Meanwhile, on August 3, FAA had put in effect Special Federal Aviation Regulation (SFAR) 44. The SFAR, which was amended on September 2 and again on September 29, instituted an ATC interim operations plan. Under this plan, FAA used "flow control" procedures that enabled a reduced controller work force, made up of supervisors, qualified nonunion employees, nonstriking controllers, and military controllers, to move air traffic in an orderly fashion. The SFAR authorized FAA to (1) restrict, prohibit, or permit VFR or IFR operations at any airport, terminal control area, or other terminal and in any en route airspace; (2) give priority at any airport to a specified class of emergency or military flights; and (3) reduce flights on a pro rata basis among air carriers, commercial operators, and general aviation aircraft.

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Traffic was reduced by matching demand to capacity at 22 selected terminal facilities during peak hours. This in turn reduced the air traffic demand at the associated air route traffic control centers. Air carriers and air taxi operators were allowed to select which of their flights were to be canceled in order to meet the objectives of the plan. A general aviation reservation program was also developed and went into operation in October 1981.

Traffic during the post-strike period hovered at around 75 percent of normal, and was being handled, at the close of the fiscal year, by 10,600 controllers. Of these, 9,600 were civilian controllers and 1,000 were military controllers on loan from the Department of Defense. Of the 9,600 civilian controllers, 3,000 were team supervisors, 5,700 developmental and journeyman controllers, and 900 recent appointees, reactivated recent retirees, and flight service specialists with controller experience. A program to bring the force up to full strength was begun immediately after the strike, with the first trainees beginning classes at the FAA Academy, at Oklahoma City, in August. Meanwhile, the Office of Personnel Management was deluged by more than 125,000 applicants to take the air traffic controller entrance examination.

Managing the Airspace. The air traffic control system in the contiguous 48 states has as one of its distinguishing features blocks of controlled airspace around and above the busiest air carrier terminals in the country. These blocks are known as terminal control areas (TCAs). Established to reduce the potential for midair collisions in areas of dense traffic, the TCAs provide room for climb and descent maneuvering and vectoring of high performance jets. Of the 44 additional TCAs once projected, only 14 remained under consideration, and only two had been proposed in a notice published in the *Federal Register*. However, since the whole subject of TCAs and terminal safety was under consideration as part of the agency's ongoing national airspace review, further action was suspended, pending completion of a review of all the remaining TCA candidate locations and expansion sites, including the two proposed earlier in the *Federal Register*.

Operational Rulemaking. In addition to the publication of SFAR 44 and its two amendments, FAA took the following operational rulemaking actions during the period:

- Published a notice of proposed rulemaking establishing rules governing the operation of hang gliders and other ultra-light vehicles. The object was to protect persons and property on the ground and prevent collisions in the air with other aircraft.

- Added a new section to FAR Part 91 providing that FAA Notices to Airmen (NOTAMS) were thenceforward to be used as an authorized means of advising pilots and aircraft operators of the issuance of emergency rules and regulations needed to ensure FAA's ability to operate the air traffic control system on an emergency basis. The object was to use the NOTAMS to provide a timely means for communicating immediately effective rules prior to their being published in the *Federal Register*.

- Issued a notice proposing the reorganization and realignment of general operating and flight rules to make them more understandable and easier to use. This was done to conform with the President's regulatory reform program.

Modernizing the Flight Service Station System. FAA moved ahead during the period with its plan to replace its 317 out-of-date and highly labor-intensive flight service stations by an automated 61-station flight service system. In September 1981, following the design certification of the flight service station computer system, FAA awarded a contract for 16 model-1 systems and 23 model-2 systems to be installed over the next seven years. The model-1 systems, to be installed first, will provide flight service specialists with alphanumeric displays and permit them to interrogate the computer and enter flight plans with the keyboard. The model-2 systems, to be established several years later, will have graphics, weather radar, and pilot direct access capabilities.

En Route and Terminal Automation. In its efforts to enhance the automation of the national air space en route system still further, FAA:

- Commissioned the last of its direct access radar channel (DARC) subsystems at all 20 of its domestic air route traffic control centers. The new computers provide a radar data processing system to back up the primary en route computer. DARC operates in a standby mode and can be switched on instantaneously in the event of malfunction or shutdown of a center's primary computer system.

- Added two major functions to the en route system's software capabilities—en route minimum safe altitude warning, and en route arrival metering. The minimum safe altitude warning function provides an alert on the controller's display when an aircraft's altitude readout indicates the aircraft is at an unsafe altitude. The arrival metering function provides the controller with computer advisories to help in managing the flow of traffic into congested terminal areas, thereby saving fuel and reducing traffic congestion.

In the terminal automation area, FAA:

- Commissioned the New York ARTS ARTS IIIA terminal radar approach control facility. The system will initially process surveillance inputs from two radar beacon sensors and provide traffic control for the three major airports in the New York metropolitan area. Eventually, it will be expanded to handle inputs from four radar beacon sensors and to control traffic into and out of additional airports in the area.
- Established 11 more ARTS II facilities, bringing the total number of ARTS II's in the air traffic control system to 75, all of them at airports with light to medium traffic.
- Upgraded the ARTS III computer systems at 28 locations to the ARTS IIIA configuration, as an essential step toward achieving full ARTS IIIA software capability in 1982. This will enable the system to track aircraft that are not equipped with beacon transponders and will improve the reliability and availability of the system.

Airport Development

Development of an effective national airport system is an important part of the agency's mission. In discharging its airport responsibility during the year, FAA:

- Obligated \$450.4 million under the airport development aid program for 622 new airport planning and development grants and for increases to grants issued in previous years. Airports serving air carriers were awarded 418 grants totaling over \$385.7 million, including 50 grants for approximately \$19.3 million for commuter airports. The remaining 204 grants, totaling \$64.7 million, were for airports that primarily serve general aviation aircraft, including 41 grants, totaling \$22.5 million, which went to reliever airports.
- Updated the national airport system plan for the period 1981-1990. The plan identified airport development needs for this 10-year period totaling \$13.5 billion.
- Issued a final report on the national runway friction measurement program. Friction measurements were taken on 491 instrument landing system equipped runways at 268 airports in the contiguous 48 states. On the basis of these measurements, the report established that the Mu-Meter, a friction measuring device, provided an effective way of measuring the friction characteristics of airport pavements and of determining the corrective action needed to ensure non-skid runway surfaces.
- Initiated technical studies within the U.S. Fish and Wildlife Service to assist airports in controlling birds and other wildlife that pose hazards to aircraft operation. Special emphasis was placed on controlling the

birds that are most frequently ingested into aircraft engines, causing aircraft power loss.

International Aviation

As part of its responsibility to encourage and foster civil aeronautics and air commerce at home and abroad, FAA engages in a variety of international civil aviation activities. Among the more important of these is participation in conferences and meetings sponsored by the International Civil Aviation Organization (ICAO), the principal forum in which international civil aviation standards are developed.

During the fiscal year, FAA:

- Participated in more than 50 ICAO meetings, ranging from informal study group sessions considering radio frequency interference to the assembly of all member countries, which sets ICAO policy.
- Continued to provide reimbursable technical assistance to foreign countries seeking to improve their air transportation systems.
- Strengthened its liaison activities with foreign aviation officials and representatives of the international aviation community. These contacts were of particular value during the period of the PATCO strike.

Environmental Protection

Protection of the environment has been a basic FAA responsibility since its establishment. In the implementation of this responsibility, FAA:

- Issued a final rule requiring foreign aircraft operators to comply with the same U.S. noise standards imposed on domestic operators. The rule requires that all foreign aircraft operators flying subsonic jet aircraft of 75,000 pounds gross weight and over be in compliance with U.S. noise standards by January 1, 1985, as a condition for landing at or departing from a U.S. airport.
- Established a voluntary noise-compatibility program for airport operators under FAR Part 150 and the Aviation Safety and Noise Abatement Act. The program set standard systems for measuring airport noise and its impact on people and identified compatible land uses for various levels of noise.

Administration

Regional Consolidation. Effective at the end of the fiscal year, FAA reduced the number of its regions from 11 to 9, to make better use of limited resources, cut overhead staffing, and increase productivity. The new

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regional configuration was achieved by consolidating the Pacific Region with the Western Region (renamed the Western-Pacific Region, with headquarters in Los Angeles) and the Rocky Mountain Region with the Northwest Region (renamed the Northwest Mountain Region, with headquarters in Seattle). In addition, the responsibility for North Dakota and South Dakota, previously in the Rocky Mountain Region, was transferred to the Great Lakes Region. The consolidation was expected to eliminate 156 positions and save an estimated \$6.4 million annually.

Personnel and Training. The agency was deeply involved in two personnel developments during fiscal year 1981: the PATCO strike and personnel cuts. Immediately following the PATCO strike, FAA began an air traffic recovery program, which included an intensive hiring effort to augment the controller staff. By September 30, 1981, over 250 recently retired FAA controllers were returned to duty, and 1,300 other persons qualified to play a support role at the centers and towers were hired.

Between March 31 and July 31, FAA had a total of 481 personnel separations, of which 170 were by reduction-in-force (RIF). A total of 168 demotions were processed as a result of the RIF.

In the training area, FAA continued its implementation of the computer-based instruction system. In this large scale test and evaluation program, the effort was begun to convert nine airway facilities electronic technician courses to the computer format for delivery at training centers in 30 airway facility sector offices and the FAA Academy. Significant savings in travel, per diem, student, and instructor time and improved instruction were expected with the adoption of this new system.

FAA also developed, validated, and put into use early in the fiscal year two new job-related tests for screening air traffic control job applicants. One test, the Multiplex Controller Aptitude Test, teaches applicants a simplified version of the rules of air traffic control, presents a picture of simulated traffic crossing a controller's display, and measures how well the applicant controls traffic in a time-stress situation. For those applicants with prior experience in aviation, a test was developed to measure their experience and knowledge in the field. Both tests were administered to approximately 125,000 controller applicants following the PATCO strike.

Labor Relations. In addition to the negotiations with PATCO, which ended with the August 3 walkout, FAA carried on negotiations during the year with the National Association of Air Traffic Specialists

(NAATS), which represents FAA's approximately 3,800 flight service specialists. In February 1981, it reached a tentative accord with NAATS on a new three-year labor agreement. However, the union ratification committee refused to ratify the agreement, whereupon FAA agreed to consider new proposals when the union was ready to make them. The proposal came in due course and the parties agreed to go back to the bargaining table in October.

FAA had meanwhile been waiting for a resolution of the issue between the Professional Airway Systems Specialists (PASS) and the Federal Aviation Science and Technology Association (FASTA), as to which of the two unions would become sole bargaining representative for FAA's 8,600 electronic technicians. Each had petitioned the Federal Labor Relations Authority (FLRA) for such recognition, and the FLRA had conducted a nationwide election in July to decide the issue. PASS won the election, only to have FASTA file an objection with the FLRA regional office, claiming the election had not been properly conducted. The regional FLRA Office dismissed the objection as being without merit, but FASTA still had the right to appeal the dismissal to the FLRA itself.

Occupational Health. FAA's Office of Aviation Medicine was deeply involved during the period in dealing with problems of controller health. It worked closely with the Office of Personnel Management to assure future consistency in health evaluation standards for the initial employment and disability retirement of controllers; established an effective working relationship with the Office of Workmen's Compensation Program of the Department of Labor in the handling of claims alleging work-related disabilities by FAA employees; and set up a review by FAA physicians of all health disqualifications based on alleged psychiatric and psychological disorders among air traffic controllers.

Management. FAA initiated a new automated property system that controls \$1.5 billion of assets. The system places FAA ahead of other federal civilian agencies in property management and enables FAA to meet various legal, regulatory, and management recommendations, policies, and standards. Special characteristics of the system include: use of standard source documents; data entry through cathode ray tube terminals; automated data entry edits; suspense file for matching physical and financial aspects of transactions; automated record changes; data entry control based on identification and need; and standard data elements, codes, programs, and reports.

The implementation of two FAA-developed computerized management systems—the personnel management information system and the uniform payroll system—was completed on schedule during the period. In addition, the functional design of a uniform accounting system, under development by FAA, was completed and approved by the Information Systems Review Committee.

In activities related to the PATCO strike, FAA:

- Took action to have absence-without-leave charges automatically generated by the computerized uniform payroll system for all air traffic controllers who failed to report for work.
- Initiated action to allow air traffic supervisors to be paid for overtime while performing duties covered by the Fair Labor Standard Act.
- Identified and initiated recovery actions against 3,098 former air traffic controllers who owed FAA a

total of \$4,786,207 as a result of advances on annual and sick leave, outstanding travel advances, and broken service agreements.

Civil Rights. FAA conducted 125 compliance reviews of airport sponsors under Title VI of the Civil Rights Act of 1964 and 49 CFR Part 21. The agency also gave approval to 70 minority business enterprise programs required by 49 CFR Part 23. In all, FAA awarded contracts totaling \$52.5 million to minority business enterprises, representing 10.3 percent of all contracts awarded by the agency during the fiscal year.

FAA employment decreased by nearly 13,000 during fiscal 1981, with the bulk of the decrease accounted for by the firing of 11,400 striking air traffic controllers; however, minority employment as a percentage of the total work force rose from 11.7 percent to 13.2 percent, while female employment rose from 14.4 percent to 15.6 percent.

Federal Highway Administration

The federal-aid highway program is a grant program that provides funds to the states for use in construction, reconstruction, and management of the nation's street and highway systems. It is designed to meet specific objectives which contribute to the improvement of our country's transportation services.

During fiscal year 1981, federal-aid highway obligations (with certain exceptions) were limited by law to \$8.75 billion, the highest annual level to date, with each state receiving a proportional share of the funds for its own use. Substantial gains were made in several major highway areas. This chapter highlights some of the significant activities and accomplishments of the Federal Highway Administration (FHWA) in carrying out the federal-aid highway program during the year.

Legislative Initiatives

The Department of Transportation submitted a proposed highway bill to Congress on March 17, 1981, that provided for a federal-aid highway program structured in such a way that it could be financed within acceptable budget levels and yet achieve national goals and interests. The extent of federal involvement in the program was carefully analyzed in reaching program decisions reflected in this legislation. Completion of the interstate system and the preservation of this system was given the highest federal priority. The primary system is also of national significance and would continue to receive high levels of federal funding. There is a high national interest in reducing the safety problem presented by deficient and obsolete bridges. Therefore, the bridge program remained as a separate program. However, the FHWA maintained that state and local governments should have the principal responsibility for highway systems which are not of national significance. Thus, the

proposed legislation eliminated or phased out a number of separate categorical programs, while increasing the flexibility with which states can use available federal funding.

Interstate Program

The interstate system construction program celebrated its 25th anniversary in 1981. The latest summary indicated that 94.9 percent of the 42,500-mile national system was in use. Five hundred and one miles were opened to traffic during 1981 and another 751 miles were under construction. Remaining were 1,382 miles, classified as gaps, not yet under construction. Obligations of federal funds and interstate construction totaled about \$3.7 billion in 1981. Obligations for interstate resurfacing, restoration, and rehabilitation during the year totaled about \$250 million, far below needs.

Under the interstate withdrawal and substitution program, withdrawals of previously designated interstate segments were approved in six states. These withdrawals reduced the remaining amount of uncompleted interstate mileage, and the localities involved received entitlement to equivalent substitute funds for use on other highway and transit projects.

Highway System Management

Efforts were made throughout the year to promote policies and procedures aimed at reducing highway construction costs. Along with promotion of cost-cutting procedures, a directive was issued that identified a number of areas where the potential for cost reduction was significant.

Accordingly, during the year, a significant number of cost-cutting procedures were adopted by the state highway agencies in project design and on projects under construction. In addition, more states were using formal value engineering techniques, 33 in design and 32 in construction. Also, 42 states were including a price adjustment clause for asphalt in their construction contracts.

Assistance was provided to states and federal agencies on geotechnical aspects of highway design and construction. Modern numerical methods, such as static pile analysis, wave equation analysis, and slope stability, produced documented savings in excess of \$20 million. Particular emphasis was placed on expensive and complex projects such as the Westside Highway project in New York.

Innovative design and construction methods were recommended in lieu of standard practices on over 40 projects. Recommended designs involving engineering

fabrics, stone columns, permanent anchors, and earth reinforcement produced savings in excess of \$10 million in addition to reducing right-of-way taking, decreasing construction time, and conserving raw materials. A savings of over \$170 million was realized through a restudy of the proposed design of the Century Freeway in Los Angeles, California.

FHWA also provided assistance to state agencies to help them make better pavement decisions. Pavement management became increasingly important as pavement systems approached the end of their service lives at the same time as highway agencies were faced with declining revenues. Also contributing to the problem were escalating costs and inflationary pressures, energy and resource conservation needs, and the trend toward increasing vehicle axle weights. This continuing activity took many forms and, during 1981, was as varied as assisting states in initiating pavement management improvement programs; commencing a long-term pavement performance monitoring pilot program in seven states; and providing technical training to about 1,000 engineers and technicians in pavement rehabilitation techniques or pavement management principles.

The FHWA has emphasized more efficient use of the existing transportation system for the movement of people and goods, primarily through low-cost improvements such as better coordination of traffic signals, carpool and vanpool projects, and other transportation system management approaches. Transportation system management attempts to achieve several objectives—improve highway system performance, maximize the return on economic investment, reduce gasoline consumption, improve air quality, and maintain personal mobility.

The national signal timing optimization project was undertaken by FHWA during 1980 to promote one of the most cost effective means of improving motor vehicle transportation. Based on results from signal retiming at 520 intersections in 11 cities, it was found that approximately 12 gallons of fuel per year were being saved for each project dollar invested. In view of these favorable results, the program was being vigorously promoted by FHWA, including distribution of computer programs and a user's manual, as well as through an agency-conducted training course.

In an attempt to stimulate state and local implementation of transportation system management projects, the Department selected 37 projects under a \$10 million discretionary grant program. For each \$1 of discretionary funds, the state or local sponsor must commit an additional \$2 in other federal, state, or local funds to the project. Among the wide range of techniques being

implemented were preferential lanes and priority treatments for high occupancy vehicles on freeways and arterials, variable work schedule programs, transit service brokers, and traffic signal improvement programs.

One of the most successful means of increasing transportation efficiency is ridesharing, simply increasing the average number of people in each vehicle. In fiscal year 1981, the Department encouraged the establishment of ridesharing programs by states and the private sector through a coordinated program of \$8 million in discretionary grants to over 40 innovative projects, through training workshops for state and local ridesharing professionals, and through private employer seminars.

Highway and Motor Carrier Safety

The safety-related activities of FHWA include a wide range of educational, promotional, regulatory, inspection, and law enforcement activities, as well as programs which provide funds to the states for highway safety improvements. Characteristic of the achievements in these areas was the initiation of approximately 1,600 hazard-elimination projects. Approximately 4,000 projects to improve safety at rail-highway grade crossings also were initiated during the year. These hazard-elimination and railcrossing projects were expected to make a substantial contribution to reducing fatal accidents. In another safety-related program, nearly 900 projects were initiated to improve pavement marking on 79,000 miles of roadway. The total amount of federal funds obligated for safety construction activities during the year was \$431.3 million.

The number of roadside examinations of vehicles and their drivers conducted by the motor carrier safety field staff increased to approximately 40,000 in 1981. Of the 40,000 vehicles inspected, 11,500, or 30 percent, were placed out of service on the spot as being too hazardous to operate on the public highways. Twelve percent of the drivers were also placed out of service as a result of serious violations of the federal motor carrier safety regulations.

The motor carrier safety field staff also performed 4,600 safety management audits at the facilities of carriers and shippers of hazardous materials. Of this total, 700 were shippers and carriers of hazardous waste.

As a result of their inspection and audit activities, the field staff prepared 1,500 case reports during fiscal year 1981, covering violations of the federal motor carrier safety regulations and the hazardous materials regulations. In some cases, carriers and shippers received monetary penalties for knowingly and willfully

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violating the regulations. During fiscal year 1981, civil and criminal penalties collected from violators amounted to approximately \$830,000.

FHWA's motor carrier safety research and development program continued to make valuable contributions to highway safety. Research and development projects that were completed during fiscal year 1981 included: an analysis of the operational use of variable load axles; an assessment of the economic impact and cost-benefit relationships of possible hours of service alternatives; and a test of the use of internal carrier forms or tachographs to record drivers' hours of service.

The year 1981 was the third year of the state-operated commercial motor carrier safety inspection and weighing demonstration program administered by FHWA. The program was in use in four states on a 90-10 percent federal-state funding formula. The number of accidents involving heavy commercial vehicles significantly decreased in those states involved in the demonstration program.

Regulatory Review

As part of the Departmental review of existing regulations, FHWA established task forces to review program requirements in the following areas: air quality guidelines, environmental impact procedures, guidelines for the development of environmental action plans, civil rights requirements, hours of service of drivers, commercial vehicle inspection, repair and maintenance, design standards for highways, and Buy America requirements. It was anticipated that recommendations resulting from these reviews would permit FHWA to reduce costs and burdens imposed on grant recipients and regulated parties.

FHWA also was examining all of its program requirements, in order to identify those items that warranted review under Executive Order 12291 and the Regulatory Flexibility Act and under criteria issued by the President's Task Force on Regulatory Relief and the Office of Management and Budget.

Pursuant to FHWA's longstanding red tape reduction policy, it was reviewing and commenting on other agencies' regulations, executive orders, interagency agreements, existing statutes, and legislative proposals, particularly where existing or potential burdens had been identified.

Cost Reduction

FHWA developed and implemented a comprehensive cost reduction and efficiency program in response to the Secretary of Transportation's adoption of cost reduction and efficiency as a major departmental objective. By the end of the fiscal year, FHWA had achieved more than \$50 million in cost savings.

Direct Federal Program

FHWA's direct federal program administers several major highway programs, including forest highways and public lands highways. The direct federal program also provides technical assistance to other government agencies (federal, state, and local) in planning and location studies, design, contract administration, and construction, emergency repair, and maintenance of transportation facilities which serve federal lands. During fiscal year 1981, 85 contracts were awarded totaling \$78.2 million.

The direct federal program also serves as the federal government's "field laboratory" to develop, field test, demonstrate, and promote the application of new engineering technology. The program has also provided technical assistance to several foreign governments, including the kingdom of Saudi Arabia.

Research and Development

Highway research and development continues to be a major aspect of FHWA's contribution to the highway industry. Cathodic protection of bridge decks has recently been a high priority research area because the proper application of cathodic protection can prevent salt-induced corrosion without requiring the removal of otherwise sound concrete bridge decks. The technology associated with cathodic protection advanced rapidly during the year. A new material was developed to distribute the protective current in existing bridge decks. Proper use of this material in a cathodic protection system could protect an existing bridge deck from steel corrosion for the remainder of its design life.

Hot asphalt concrete pavement recycling was identified as a program emphasis objective during 1981. A plan for making recycling competitive with other techniques and for gaining acceptance by states and the highway industry was developed by FHWA, resulting in a tripling of recycling projects in 1981 compared to 1980.

Federal Railroad Administration

The Federal Railroad Administration (FRA) is responsible for planning, developing, and administering programs to achieve safe operating and mechanical practices in the railroad industry. Its responsibilities include enforcement of the federal laws and regulations which promote the safety of railroads.

FRA's accomplishments during fiscal year 1981 included:

- Developing legislation to transfer Conrail to private sector ownership. (The first step of this process was reached when an FRA-designed proposal set the guidelines for the sale of Conrail lines in southern New England).
- Developing legislative changes to reduce Amtrak's federal financial needs and to place that company on a business basis.
- Administering a comprehensive program of federal assistance for national, regional, and local rail services.
- Stimulating a historic labor-management agreement to streamline FRA safety regulations.
- Developing legislation to transfer the Alaska Railroad to the state of Alaska.
- Working on legislation to rehabilitate Washington's Union Station.
- Reorienting the northeast corridor improvement project.
- Restructuring FRA's research and development program.

Conrail

The key event for FRA in fiscal year 1981 was the passage of the Northeast Rail Service Act of 1981. Under the Act, Conrail's stock now held by the federal

government may be sold to the private sector. If the stock is not sold and if Conrail does not become financially self-sufficient, its assets may be sold. To help Conrail achieve self-sufficiency, the Act repealed the Title V lifetime labor protection provisions of the Regional Railroad Reorganization Act, provided displaced Conrail employees with a one-time maximum payment of \$20,000, and established the funding for a substantial workforce reduction program. It also authorized the transfer of Conrail commuter services to a new commuter subsidiary of Amtrak or to local commuter authorities and required that Conrail's employees accept substantial cuts in wages.

As part of the supplemental transfer provisions of the Act, FRA will assure continuation of rail service on Conrail's southern New England lines by working for a mutually satisfactory agreement involving Conrail, the Boston and Maine, the Providence and Worcester, and several small railroads.

Using the provisions of the Northeast Rail Service Act of 1981 and the Staggers Rail Act of 1980, Conrail began progress toward self-sufficiency. It used the new pricing freedoms of the Staggers Act to adjust rates, introduce surcharges, and initiate new services; and under the expedited abandonment provisions of the Northeast Rail Service Act, it filed applications to abandon 2,800 route-miles of uneconomic lines. As a result, Conrail earned operating profits in the second and third quarters of calendar year 1981 and forecast that, for the first time, it would earn a profit for the calendar year. Conrail's drawdowns of federal funds decreased from \$641 million in fiscal year 1980 to \$165 million in fiscal year 1981. No further drawdowns were contemplated.

United States Railway Association

The Northeast Rail Service Act of 1981 changed the management structure of the United States Railway Association. The existing Board of Directors was reconstructed as an Advisory Board and a new Board of Directors was created, with members from the Government Accounting Office, the Interstate Commerce Commission, and the Department of Transportation, plus the USRA Board Chairman and the Conrail Chairman.

Amtrak

In 1981, the National Railroad Passenger Corporation (Amtrak) carried approximately 21 million passengers, improved its on-time service, and took steps to improve system productivity through reductions in staff and the elimination of selected routes. Nonetheless, Amtrak's

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financial condition remained relatively unchanged, as revenues covered only about 40 percent of operating expenses.

As a result of FRA's efforts, the Rail Passenger Service Act was amended, advancing from fiscal year 1985 to fiscal year 1982 the requirement that Amtrak achieve a revenue/cost ratio of 50 percent; imposing a requirement that Amtrak operate services only to the extent that funds are available; and exempting Amtrak from certain state and local taxes. The amendments also changed the state reimbursement formula for state-assisted passenger services, reduced the membership of Amtrak's Board of Directors to nine, and restructured the composition of the Board.

Near the end of 1981, Amtrak took several actions to enable it to operate within available resources. The system (as measured by train-miles) was reduced approximately 10 percent, its on-board services and other costs were reduced through modification of food and beverage services, and discretionary administrative expenses were reduced.

The Northeast Corridor Improvement Project

FRA revised the \$2.5 billion northeast corridor improvement project by eliminating projects that did not contribute to safe and reliable service. Emphasis was placed on basic rehabilitation of the track structure and signaling system to provide safe and reliable service. It was anticipated that the revised program would be completed for less than \$2.2 billion.

FRA continued to make major progress toward completion of the project. Between New York and Washington, D.C., metroliner service times were reduced from 3½ hours to less than 3 hours, and conventional service times were reduced from 4½ hours to less than 3½ hours. On the New York to Boston segment, the trip time was reduced from about 5 hours to just over 4 hours, the fastest time in 10 years.

Contracts totaling more than \$100 million were awarded, including the Providence, Rhode Island, maintenance-of-way base; the Baltimore and Potomac Tunnel rehabilitation; Pelham Bay and Groton moveable bridge rehabilitation; and a centralized electrification and traffic control system between Washington, D.C., and Wilmington, Delaware. There were also five section-improvement projects awarded, including curve realignments, drainage, and interlocking work. Major rehabilitation contracts, valued at over \$40 million, were awarded for seven passenger stations. Meanwhile, work continued on the design of other project components and on the preparation of contract bid documents.

Amtrak installed 60 miles of concrete ties and 20 miles of continuous welded rail and completed 100 miles of high-speed surfacing and 220 miles of rail grinding during the 1981 construction season. Work on 13 bridges was completed, bringing the number of completed structures to 102, of a total of 212 structures included in the northeast corridor project.

Railroad Safety

FRA embarked on a new direction in railroad safety in fiscal year 1981. As expressed in a 1981 report to Congress, *Systems Safety Plan for Improving the Management of Railroad Safety Programs*, FRA recognized that the ultimate success of its safety effort would be determined by the effectiveness of the government and industry relationship. In 1981 FRA shifted the emphasis from the imposition of fines for technical violations toward a more cooperative working relationship with the railroads. FRA's approach to regulation and enforcement is to minimize the regulatory burden on railroads and to limit the use of fines for safety violations.

Railroad management has demonstrated a positive attitude toward FRA's safety assessments. Fines decreased from \$15 million in 1980 to \$1.3 million in 1981. Train accidents and rail-related casualties also decreased. Grade crossing fatalities have decreased by almost 40 percent in the past 10 years; but there were still 708 crossing fatalities in calendar year 1980, representing almost 50 percent of the total number of railroad fatalities. FRA held a meeting with 18 rail carriers to explore new initiatives in educational safety programs for railroad-highway crossings.

There were 271 FRA safety inspectors supplemented by 93 state inspectors in fiscal year 1981. To improve the allocation of the government inspection resources, FRA instituted a national inspection plan for the first time during 1981. The national inspection plan specifically identified the number and type of inspections to be conducted by federal and state inspectors.

The value of a cooperative government, labor, and management relationship in railroad safety was also demonstrated by the success being achieved in the area of regulatory reform. Rail labor and management, at FRA's request, worked out a joint approach for proposed changes to FRA's safety rules and regulations. The Railway Labor Executives Association (RLEA) and the Association of American Railroads (AAR) proposed several changes in the power brake regulations and track standards and amendments to the Safety Appliance Act, which covers the movement of defective

railway cars. These proposals, which will reduce the regulatory burden while improving safety, were to be implemented in 1982.

Research and Development

FRA's research and development program was restructured to emphasize safety. Other projects were being phased out or shifted to the private sector. Principal safety efforts during fiscal year 1981 included the following:

- Completing an evaluation of the safety and technical performance of five new types of freight car trucks. The results will be used by industry in making decisions regarding investments in new equipment.
- Completing two major tests of passenger equipment. One confirmed that it is safe for Amtrak to operate the light, rapid, comfortable tilt-body passenger train at speeds higher than conventional equipment. The other resulted in modifications to the new AEM-7, which will be the primary electric locomotive in the northeast corridor.
- Determining the safety valve size requirements for 25 hazardous materials commonly transported in rail tank cars.
- Completing selected experiments at the facility for accelerated service testing in Pueblo, Colorado.
- Providing guidance to industry on the performance of crossties, fasteners, rails, and ballast.

A secondary goal of the research and development program has been to assist railroads in the pursuit of improved operations and cost reduction. Progress was made toward this goal. The projects were all initiated in previous years, but concluded during fiscal year 1981, with the publication of results on numerous subjects. Major topics included:

- The sprint service demonstration, a trailer-on-flatcar service between Chicago and St. Paul.
- Techniques for designing classification yard improvements, through the use of computers.
- The effect of fuels other than conventional No. 2 diesel on the performance of medium-speed engines.
- Specifications for a low-profile lightweight intermodal railcar.
- A method to estimate transportation costs and radiation exposure to the public and crew members from rail shipments of radioactive materials.

Government-Industry Programs

Development of an Autorack Car Pool. FRA coordinated discussions to create a national freight car pool for transporting automobiles. After experimenting with centralized distribution of the cars, the cooperative Industry-Government National Steering Committee on Freight Car Management found that a considerable number of empty miles could be saved. This was achieved by routing autorack cars to the nearest point of loading rather than by returning them empty to their place of origin. The national pool was expected to result in substantial savings for the railroads over the next 10 years.

Houston Terminal Information Exchange System. Grain port congestion can have a negative impact from the port all the way back to the producing areas. In cooperation with the railroads and labor, FRA materially improved railroad operations at the Port of Houston. The project developed and installed a terminal information exchange system that provides fully automated car inventory and status information. The system will save the railroads in Houston more than \$12 million annually. The benefits of this improvement will reach back to the upper Midwest, bringing improved transit times and quicker car turnarounds for important grain movements.

Local Rail Service Assistance. The FRA improved its distribution of assistance to states for local rail service. In contrast to previous years, states used the program to fund fixed facility projects only—not to provide operating subsidies.

Assistance to Railroads. During fiscal year 1981, FRA approved \$118 million in low-interest federal loans and loan guarantees under Title V of the Railroad Revitalization and Regulatory Reform Act of 1976. These funds were used to rehabilitate and improve track and equipment. Under Title V, FRA also provided \$3 million as compensation for emergency directed service over Milwaukee Road and Rock Island lines. A total of \$718 million has been committed to railroad rehabilitation under the Title V program.

Regulatory Reform. The Staggers Rail Act of 1980 precipitated a series of Interstate Commerce Commission proceedings regarding regulatory reform. FRA was interested in assuring that the Act be interpreted so as to provide the maximum degree of flexibility to the railroads in the areas of marketing and operations. In comments to the ICC, FRA argued for the inclusion of evidence relating to geographic and product competition

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in making determinations of market dominance and for equitable and economically sound standards for determining revenue adequacy. This position was adopted by the ICC. The FRA also participated in ICC proceedings concerning car hire charges, rates for recyclable commodities, deregulation of export coal movements, and inflation-based rate increases.

Labor-Management Cooperation. The labor-management program—a cooperative program established to improve railroad operations—completed its fifth year. The program involves labor and management in developing, implementing, and evaluating experimental changes in operations and practices. Upon completion of experiments, labor and management have the option of adopting the proposed changes permanently. During 1981, work continued on projects in Houston, St. Louis, and Buffalo and on the Milwaukee Road. A new project was initiated for the New England region.

Mergers and Reorganizations

Union Pacific, Missouri Pacific, and Western Pacific. FRA supported the proposed merger of the Union Pacific, Missouri Pacific, and Western Pacific railroads. It recommended that competitive balance in the West be maintained by granting strategic trackage rights to competing railroads. The merged system provides efficient single-line service from the West Coast to the Mississippi River and beyond.

The Milwaukee Road. The bankrupt Chicago, Milwaukee, St. Paul and Pacific Railroad, a Class I transcontinental railroad, formerly operated a 10,000-mile route system. After the submission and rejection of various plans for reorganization, the Milwaukee advanced a new plan. At the end of the fiscal year, FRA was evaluating the assumptions, methods, and data of the plan, as they related to traffic and revenue projections, operating plants and facilities, and equipment, labor, and cost requirements. The results were to be available in the second quarter of fiscal year 1982.

The Alaska Railroad

The FRA-managed Alaska Railroad enjoyed the best year in its 58-year history. The railroad handled a total of 51,307 carloads, a 55 percent increase over 1980. Total freight tonnage moved was 3,362,061, a 93 per-

cent increase. The fiscal year 1981 total freight tonnage exceeded the all-time previous high, in fiscal year 1977, by 46 percent.

The railroad's financial results reflected the first earned surplus since fiscal year 1976. Revenues for the year were \$43.9 million, up 52 percent over the prior year, while expenses were \$40.6 million, an increase of only 17 percent. The earned surplus of \$3.3 million compared with a loss of \$5.8 million in fiscal year 1980, an improvement of \$9.1 million. These tonnage and financial achievements were attributed to aggressive marketing, increased employee productivity, management and budget controls, and a more favorable Alaskan economy.

FRA developed a legislative proposal for transferring the federal responsibility for operating the Alaska Railroad to the State of Alaska.

Civil Rights

Notwithstanding personnel freezes and cutbacks, FRA's civil rights program made significant strides in internal equal employment opportunity.

A new upward mobility program provided opportunities for seven female or minority employees to progress from clerical positions into professional positions. A safety inspector training program provided opportunities for minority and female college graduates to be trained as safety inspectors—an occupation that has been traditionally underrepresented by minorities and women. This trainee program was developed in conjunction with Southern Railway's training facility in Georgia.

There was an overall improvement in total minority representation in FRA, from 18.3 percent to 18.6 percent. As part of the federal equal opportunity recruitment program, a candidate referral system was established to identify and refer minority and female candidates for job vacancies.

The minority business enterprise program, begun in 1980, resulted in FRA contracts totaling \$23.5 million for northeast corridor improvement project construction, or 14.3 percent of the amounts contracted for that year. In fiscal year 1981, the remaining minority business enterprise work on these 1980 contracts increased actual minority business participation to 15 percent—the goal for the project.

National Highway Traffic Safety Administration

The National Highway Traffic Safety Administration (NHTSA) is responsible for reducing the deaths, injuries, and economic losses resulting from traffic accidents. This is accomplished by improving the safety performance of motor vehicles and working with the states to encourage safer driver and pedestrian behavior.

NHTSA also investigates safety defects in motor vehicles, ensures that manufacturers comply with vehicle and equipment safety standards and the bumper standard, sets and enforces fuel economy standards, conducts research on vehicle performance and design, and provides consumers with information on automobile crashworthiness, maintenance, and repair.

During 1981, major changes were made in NHTSA's safety efforts. Resources were redirected to the most serious problems and to ones that showed a strong potential for yielding significant safety benefits.

Existing and proposed vehicle safety regulations were reviewed for their effectiveness and efficiency in meeting critical traffic safety needs. Those that did not meet the requirements were withdrawn.

In undertaking this review, each standard, regulation, or proposed rulemaking or modification was examined to determine: (1) the direct or indirect relationship of the rulemaking in question to the safety or consumer goals of the agency; (2) the relative importance of the rulemaking in achieving such goals; (3) whether the performance addressed by the rulemaking would be expected to continue at comparable levels in the absence of the rulemaking; (4) the costs, benefits, and burdens created or imposed by the rulemaking; (5) the effects of rulemaking on innovation and productivity in the industry and any associated administrative costs or burdens; and (6) whether in the absence or withdrawal

of federal regulation, the states would be able or encouraged to regulate independently, thereby making motor vehicle regulation more complex and costly.

Similarly, cooperative state and community traffic safety programs were reviewed to determine which ones showed the most promise for reducing accidents, fatalities, and injuries. Occupant protection, drunk driving, police traffic services, traffic records, and emergency medical services were emphasized.

Providing more safety related information to consumers and increasing the cooperative efforts between NHTSA and the automotive industry in conducting safety research were also emphasized.

1981 Statistical Summary

For the first time since 1974, fatalities resulting from motor vehicle accidents showed a significant decline. There were 49,268 traffic fatalities in 1981, a 3.6 percent reduction from the 51,091 killed in 1980.

The fatality rate (the number of fatalities per 100 million vehicle miles of travel) also declined in 1981, indicating that the risk per mile was continuing to decrease. However, the fatality rate per 100,000 population has remained relatively constant for 20 years. Combined, these rates suggest that although motorists today can drive longer distances without being killed or injured, the probability of being killed or injured in an automobile accident is just as high now as it was 20 years ago.

Regulatory Reform

Many of the requirements of the motor vehicle safety standards and regulations currently in force have led directly to substantial safety improvements and have resulted in reduced fatalities and serious injuries. Others, however, have produced relatively insubstantial benefits and have not been cost-effective.

A comprehensive review of NHTSA standards and regulations was conducted to find ways to reduce unnecessary regulatory burdens (without jeopardizing the safety or consumer-related goals and policies established by Congress), and to consider alternatives to regulation. Seventeen existing or proposed safety regulations were targeted to be rescinded, modified, or delayed.

A major action resulting from this review was the rescission of the automatic restraint (air bags, automatic belts) requirements in FMVSS No. 208, "Occupant Crash Protection." A provision calling for mandatory installation of automatic restraint systems in passenger

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cars was rescinded in October 1981 because of uncertainty in the projected use rates for automatic belts, public acceptance, and overall benefits from the standard. The decision was made after months of study and review of the lifesaving potential and economic costs of passive restraint systems. Based on anticipated usage rates, NHTSA estimated that the costs of the automatic restraints would exceed benefits by \$100 million annually.

Motor Vehicle Safety

Motor vehicle crashes cause approximately 50,000 fatalities and 3,400,000 injuries in the U.S. each year. They are the leading cause of death among people ages 5 to 34, the number one cause of on-the-job fatalities, and the cause of ten times more deaths and injuries than all other forms of transportation.

From an economic standpoint, motor vehicle accidents cost the nation more than \$50 billion each year in medical and rehabilitation costs, lost wages, welfare, and property damage. There are also hidden costs of these accidents—the unrealized human potential and the emotional, physical, financial, and social disruptions suffered by victims and their families.

Crashworthiness

The crashworthiness of a vehicle, or the level of protection that is provided occupants in an accident, is measured by the effectiveness of several factors: how well the vehicle provides a zone of protection against the crushing forces of impact; occupant compartment integrity to minimize intrusion; safety belts or other occupant protection systems to restrain the occupants during a crash; and interior surfaces designed to reduce the severity of any injuries to belted or unbelted occupants.

Research continued on test procedures and vehicle design characteristics to improve crashworthiness. Methods for testing and improving steering assembly crash performance, for evaluating frontal crash protection in car-to-car collisions, and for assessing levels of side impact protection continued to be developed.

Side Impact Protection

Almost one-third of the fatalities and serious injuries in motor vehicle crashes occur when vehicles are struck in the side. Side impact research concentrated on the development of test procedures to evaluate levels of protection provided by current vehicles and on potential vehicle improvements. Side impact test devices, in-

cluding a moving barrier and a dummy, were built and evaluations of their effectiveness were begun.

Design changes were made to different models of production vehicles to improve their safety in side crashes. The improvements included modified structures which increased the integrity of the door area and reduced the intrusion during impact. The improvements also included the addition of energy-absorbing padding to the interior of the door, which helps reduce the intensity of the crash forces on the occupant.

Vehicle Systems

The vehicle systems program provides a data base for safety improvements that can be incorporated into production automobiles. Performance levels and the economic feasibility of advanced technology are assessed at a biennial international technical experimental safety vehicle conference.

The conference encourages the international exchange of research and the application of safety technology to the marketplace. The extensive proceedings of the eighth conference, which was held in October 1980, were published in 1981 and planning began for the Ninth Conference, to be held in Kyoto, Japan, in November 1982.

The research safety vehicle projects that began in 1974 to develop small cars that demonstrate advanced safety, good fuel economy, and acceptable emission levels were completed in 1981. Although these cars were not envisioned as a new product line (and would require substantial upgrading in non-safety-related areas to meet American consumer expectations of comfort, convenience, and handling), results of the crash testing of these prototypes indicated a potential to satisfy all requirements of Federal Motor Vehicle Safety Standard No. 208, "Occupant Crash Protection," at crash severities far in excess of that standard. Work continued on how to adapt advanced safety technologies into production vehicles.

Safety Belts and Child Seats

Studies of motor vehicle accidents showed that few occupants were wearing their safety belts when they needed them. Research was conducted to measure public attitudes about safety belts and to determine why usage of these lifesaving devices is so low (about 11 percent). The studies included research on motivation and risk perception; belt use rates and trends; and the effectiveness of educational and other incentive messages.

Preliminary results indicated significant changes in attitudes and belt wearing could be achieved by the use of positive incentives emphasizing driver responsibility for belt usage in the car and information about the role of belts in maintaining control of the vehicle.

The most frequently given reasons for not using safety belts are discomfort and inconvenience. To help alleviate this problem, NHTSA issued a standard in January 1981 (to be effective September 1, 1982) that specified additional performance requirements for safety belt assemblies to promote increased comfort and convenience. It applied to all manual and automatic belts in cars and light trucks except for 3-point lap/shoulder belts in the front seating positions of passenger cars. Manual belts in the front seats of cars were exempted because at the time the rule was issued passenger cars were scheduled to be equipped with automatic restraints in the front seats beginning in the 1983 model year. The subsequent rescission of the automatic restraint requirements of Standard No. 208 prompted the agency to delay for one year (until September 1, 1983) the effective date of the new requirements in order to reconsider the comfort and convenience rules in light of the changed circumstances. A new proposal was expected in 1982.

Since not all vehicles are equipped with suitable safety belt anchorages for the proper installation of child safety seats, a notice of proposed rulemaking was issued in December 1980 proposing that vehicles with automatic restraint systems at the right front seating position be equipped with anchorages for lap belts at that position. It would also require all rear seating positions in motor vehicles weighing less than 10,000 pounds (GVWR) to have anchorages or pre-drilled holes suitable for the installation of anchorages for tether straps on child restraints.

Other occupant protection research concentrated on improving the safety performance of small cars. Specific activities included:

- Test procedures and steering column performance criteria were developed that better simulate an actual crash. The lowest injury levels were observed in tests with an "improved" steering assembly that was constructed of the "best" components from production steering assemblies.
- Computer simulation models were developed to record the interaction of the driver's chest and the collapsible steering column and wheel combination. These models are used to predict the steering column and wheel performance in lightweight small cars. They have

reduced the costs of introducing improvements into production automobiles.

- Studies were conducted to determine the relationship between shoulder belt fit and crash performance of the restraint system and to identify parts of the safety belt assembly or steering column and occupant compartment which could be improved to provide 35 mph crash protection. Protection at that speed was demonstrated in several vehicles after minor modifications were made. The performance of the safety belt system was upgraded for the Volvo, Plymouth Reliant, and Plymouth Horizon to achieve the FMVSS No. 208 criteria. The improvement to the Volvo consisted of reducing the amount of belt webbing to reduce "spool-out." The two modifications which were made to the Reliant and Horizon consisted of stiffening the seat and the addition of a belt web locking device to reduce "spool-out."

Biomechanics

Biomechanics is the field of study that applies engineering principles and techniques to understand and control impact trauma in humans. Biomechanical research continued to characterize injuries to determine injury tolerance of the human body. Work began on the creation of new automotive test dummies to support advanced vehicle occupant safety research. These new dummies are necessary for the development of improved vehicle safety designs.

Making automobiles less hazardous to pedestrians is another area of biomechanical research. Investigations were continued to measure the injury reducing potential of bumpers made of safer materials, to study the damaging effects of the grill, hood edge, and hood, and to evaluate the effectiveness of various modifications to these structures that could reduce the severity of pedestrian injuries. A notice of proposed rulemaking was issued in January 1981, proposing that passenger car front bumper systems be considerably more energy absorbent to reduce pedestrian injuries in low speed collisions.

A senior NHTSA engineer from the Office of Passenger Vehicle Research was selected for a sabbatical to Oxford University to pursue post-doctoral research and studies in motor vehicle safety. The assignment involved investigating automobile accidents to determine the nature, cause, and extent of trauma, and to relate the trauma observed in the emergency room to the final outcome of the victim. This research effort directly supported NHTSA's research program for the development of improved human injury criteria and biomechanical information.

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Heavy Duty Vehicles

NHTSA's heavy duty vehicle research develops and demonstrates approaches to improve truck and bus safety by enhancing their crash avoidance and crashworthiness capabilities.

Research emphasis was on improving the braking of heavy vehicles, defining the limits of heavy vehicle handling performance, identifying the safety and economic benefits of retarders (devices that use the engine or drivetrain to slow the vehicle), assessing the cost and performance of splash and spray suppression devices, and evaluating certain occupant protection techniques for heavy trucks.

A notice of proposed rulemaking was issued in January 1981 describing the requirements for rear underride protection for most large trucks and trailers. Static and crash tests conducted by NHTSA demonstrated that these systems can help reduce injury to the occupants of smaller vehicles that collide with the rear end of a truck.

Lighting

A notice of proposed rulemaking was issued in January 1981 which would amend Standard No. 108, "Lamps, Reflective Devices, and Associated Equipment," to add a supplemental, center, high-mounted stop lamp to the existing rear lighting requirements for passenger cars.

A notice of request for comments was issued in August 1981 to obtain information on possible changes to the federal regulations on motor vehicle headlight systems.

Brakes

A final rule was issued in January 1981 that extended Standard No. 105, "Hydraulic Brake Systems," to trucks, buses, and vans. The requirements are similar to those for passenger cars, but the performance levels are slightly less because of the operating characteristics and different capabilities of these larger vehicles.

Harmonization of Safety Regulation

The advent of the "world car" concept has highlighted the problem of designing automobiles to comply with differing regulations in world markets. At meetings on vehicle construction at the Economic Commission for Europe (ECE), a United Nations organization, NHTSA representatives stressed the high priority within NHTSA of harmonizing U.S. and ECE requirements,

stating that this will not only improve motor vehicle safety but will also reduce the cost of international trade. United States standards on braking, lighting, controls, and displays are now in the process of being amended to be in greater harmony with those of the ECE.

Highway Safety

Nearly every traffic death and injury can be traced in part to some human factor: the driver or passenger who didn't use a safety belt; alcohol, which continues to be involved in more than half the nation's traffic fatalities; or repeat violators who, due to deficiencies in a state's traffic records system, elude the enforcement efforts which would otherwise remove them from the road.

NHTSA continued to work with state and local safety officials, placing emphasis on five programs which have shown the greatest results in reducing accidents, injuries, and deaths: occupant protection, alcohol, traffic records, police traffic services, and emergency medical services.

Occupant Protection

Safety belts have the greatest potential for an immediate and dramatic reduction in deaths and injuries resulting from automobile crashes.

Despite their availability in nearly every passenger car in the country and their estimated 57 percent effectiveness when worn properly, only about 11 percent of motorists use them.

Beginning in 1981, NHTSA began the most comprehensive public education campaign on safety belts that has ever been attempted, one that will be of long duration and that combines the information abilities and influence of the news media, employers, schools, and religious, civic, and social organizations. Every aspect of our society that relates to people and their automobiles is being approached and urged to actively assist the agency in changing public attitudes and perceptions about driving risk and to promote the lifesaving benefits of safety belts.

Unlike previous safety belt campaigns that relied almost entirely on public service advertising and were of short duration, NHTSA committed itself to a long-term effort that is predicated less on public service announcements and more on the influence of respected community institutions and national organizations. Establishing networks with numerous state, local, volunteer and private sector groups around the country, NHTSA provided technical assistance and educational materials to reach, inform, and persuade the public,

appealing to people where they live, work, socialize, and form their opinions.

NHTSA also continued its safety belt workshop series for state, regional, and volunteer organizations. Nineteen workshops were held in 1981.

Child restraints were a major legislative issue, with 36 states introducing child passenger protection bills in their 1981 legislative sessions. Nine states passed bills or strengthened existing ones, and two states passed bills requiring statewide campaigns to educate parents about child restraints. A radio, TV, and print campaign to increase child safety seat use was produced by NHTSA and distributed by state highway safety agencies.

Alcohol

Drunk driving is the nation's number one highway safety problem, a national epidemic, transcending state boundaries, to which no one is immune. One-quarter of a million Americans have lost their lives in alcohol-related traffic accidents during the past decade. The solution to the problem must be implemented at both the state and local level, where comprehensive programs can be directed toward—(1) deterring those drunk drivers who are never arrested and influencing other individuals to moderate their drinking behavior or not to drive after drinking; (2) combining public information and enforcement or adjudication programs; (3) and promoting attitudes which reduce the tacit public acceptance of drunk driving.

Calendar year 1981 marked a turning point in the national effort against the drunk driver. Effective grass roots citizen's groups appeared around the country, launching public information campaigns, forming task forces to review state and local drunk driver processing systems, and petitioning state legislatures and courts for stricter enforcement. Twenty-two states passed more stringent drunk driving laws, and six states established formal task forces or commissions to address the problem.

NHTSA took a leading role in the drunk driving issue, focusing on technical assistance in individual countermeasures, public information, the adoption of comprehensive, community based, general deterrence programs, financial support, and countermeasure research and development to stimulate effective programs within the states. NHTSA held 26 workshops for state and local officials, legislators, judges, police, health care professionals, and citizen groups to acquaint them with the latest technologies for implementing comprehensive drunk driver control programs. An alcohol

program management course for local project coordinators was also developed and tested.

Traffic Records

An efficient electronic records system, containing files on drivers, registered vehicles, accident information, and roadway inventories, is an important part of any state highway safety program. Traffic records help to accurately identify safety problems and to evaluate the effectiveness of programs to deal with them. Twenty-two states upgraded their accident record systems following corrective measures suggested by the accident data improvement plan, a joint NHTSA and Federal Highway Administration project begun in 1978 to improve the quality of state accident data.

The national driver register continued to operate, with emphasis on system improvements.

Police Traffic Services

Ninety percent of all crashes involve traffic law violations. Alcohol is a factor in 50 percent of fatal crashes and speeding is a factor in 35 percent of them.

Police traffic services, including traffic law enforcement, are the most effective means of reducing accidents, injuries, and fatalities. States allocated more than 40 percent (more than \$63 million) of their total fiscal year 1981 federal assistance funds to traffic services.

In addition to providing financial and technical assistance to states, NHTSA joined law enforcement organizations, police training institutions, and state and local police agencies to sponsor workshops on priority traffic enforcement programs. The workshops provided a forum for discussing enforcement problems and successes, covering topics such as management, accident investigation, radar and breathalyzer operation, and drunk driver detection.

A drunk driver detection guide, which describes the most frequent abnormal driving characteristics of drunk drivers, and a training film were distributed nationwide and were in use in 12 state training programs.

Emergency Medical Services

Prompt and appropriate medical treatment could have prevented an estimated 25 percent of the 1981 highway fatalities.

The states allocated more than 70 percent of their fiscal year 1981 emergency medical financial assistance

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to train first responders, dispatchers, emergency vehicle and ambulance operators, emergency medical technicians, paramedics, and extrication teams.

Two new ambulance lighting systems were tested to verify their adequacy to provide both safety and signal for right-of-way, and a rulemaking was proposed to incorporate the Emergency Medical Services "Star-of-Life" symbol into the *National Manual for Uniform Traffic Control Devices*, an action which could result in increased public access to emergency medical treatment.

Fuel Economy

During 1981, domestic passenger automobile and light truck manufacturers further increased the average fuel economy of their fleets. Plans of the major manufacturers through the mid-1980's indicated that they would continue to meet or exceed the existing fuel economy standards for both passenger cars and light trucks.

As a result, NHTSA withdrew an advance notice of proposed rulemaking for post-1985 fuel economy standards and chose instead to monitor the effects of the market and the efforts of the manufacturers to improve automotive fuel efficiency voluntarily.

The agency also issued a notice of proposed rulemaking to reduce the volume of paperwork that manufacturers must submit in semi-annual reports under the fuel economy program.

An interim final rule was published on February 18, 1981, permitting manufacturers of model year 1982 light trucks to combine their 2-wheel and 4-wheel drive light truck fleets, in the same manner as already provided for model years 1983-85, to demonstrate compliance with the 1982 standards. The rulemaking also prescribed procedures for consideration of petitions under the Automobile Fuel Efficiency Act of 1980. This act authorizes granting relief from provisions of the 1975 law that established the fuel economy program.

Voluntary Truck and Bus Fuel Economy Program

The joint industry-government voluntary truck and bus fuel economy program continued to demonstrate that government and industry can work together without formal regulation to achieve heightened competition, increased profits, fuel conservation, and reduced dependence on foreign oil.

Information supplied by truck fleet members showed that they increased their average miles per gallon from

4.62 in 1976 to 5.56 in 1981, an improvement of more than 20 percent. During 1980 alone voluntary fuel savings from the purchase of fuel efficient equipment and devices on new trucks amounted to approximately 2.2 billion gallons. The cumulative savings from 1973 through 1980 were approximately 7.3 billion gallons. According to a study by the International Harvester Corporation, this exceeds savings achieved by legislated passenger car fuel economy standards, which will not equal voluntary commercial truck savings until 1983.

The fuel economy program continues to encourage the private sector to assume a greater share of program costs. In the past year, program members have shared the responsibility for printing several program publications, running free fuel-economy advertisements supporting program goals, and assuming full responsibility for several projects.

New Car Assessment Program

NHTSA continued to compare the crashworthiness of different automobiles and to make the resulting information available to consumers. The tests were conducted under Title II of the Motor Vehicle Information and Cost Savings Act, which requires the Department of Transportation to publish comparative information on new cars by make and model in three areas: crashworthiness (how well cars protect their occupants in crashes), damageability, and ease of diagnosing and repairing damage.

The intent of the program is to provide increased consumer awareness of the safety and performance differences among cars and to encourage competition among manufacturers to produce cars that are safer, more resistant to damage, and less costly to service and repair. Such information ultimately could reduce the need for some safety regulations. An example of this competition was demonstrated by the performance of a 1981 Honda Civic 2-door when compared to its 1979 predecessor. Honda Motor Company made improvements to this model in the area of reduced steering column movement and overall restraint system response. As a result, the 1981 Honda Civic 2-door exhibited greatly improved crash performance.

In the frontal tests, cars crash at 35 mph into a fixed rigid barrier. Each car carries two instrumented adult dummies in the front seat that are fully restrained, wearing both lap and shoulder belts. During the test, readings are taken which measure and record the severity of impact to the head, chest, and thighs of each dummy. Since the program began in mid-1979, 69 makes

and models have been subjected to frontal and frontal oblique crashes.

Bumpers

Since 1974, all passenger cars have been equipped with bumpers that prevent damage to the vehicle body in crashes at speeds up to 5 miles per hour.

NHTSA tentatively concluded that the existing bumper regulation did not meet the statutory requirement of the Motor Vehicle Information and Cost Savings Act that such a standard "seek to obtain the maximum feasible reduction of costs to the public and to the consumer."

A notice of proposed rulemaking was published which requested information concerning alternatives to the existing bumper standard in order to provide the greatest cost benefit to consumers. An analysis of the comments, plus material presented at two public hearings, was to be considered in the agency's decision for a final rule on the bumper standard.

The alternatives under consideration included various combinations of 5 mph and 2.5 mph front bumpers with either 2.5 mph rear bumpers or a specification for height only on rear bumpers.

Defect Investigations

Ford Transmissions. This investigation was based on evidence that certain Ford vehicles manufactured between 1970 and 1979 inadvertently shifted from park into reverse after the drivers, believing they had shifted into park, left the vehicle. The investigation was terminated by a settlement agreement. Ford agreed to notify all owners of the Department of Transportation findings and to provide a precautionary safety label to remind vehicle operators of steps they should take to reduce the possibility of harm.

General Motors Mid-Size Vehicles. Six million 1978-79 GM vehicles were voluntarily recalled to replace the bolts attaching the rear axle control arms. Failure of the bolts could result in loss of vehicle control.

Grumman Flexible 870 Advance Design Transit Bus. NHTSA influenced the recall of 2,628 Grumman transit buses due to cracking of the rear axle "A" frame. Cracking and fracture of the A frame could lead to a loss of vehicle control.

1976-80 Volkswagen Rabbits and Sciroccos. A NHTSA investigation resulted in 110,000 Volkswagen vehicles being recalled to replace defective accelerator

cables which could cause the driver to lose control of vehicle speed.

1980 General Motors X-Body. NHTSA influenced the recall of 48,000 GM vehicles to correct a defective braking system. The rear wheels could prematurely lock during braking, resulting in a "fishtailing" of the rear end and loss of vehicle control.

1976-79 Volkswagen Rabbits and Sciroccos. Volkswagen recalled 448,167 vehicles for an electrical problem. (An earlier recall corrected inadvertent starting of the vehicle while parked.) The NHTSA-influenced recall corrected a defect in the fuel pump circuit which could cause the vehicle to stall while moving.

1978-79 Dodge Omnis and Plymouth Horizons. NHTSA influenced the recall of 425,000 Chrysler vehicles to prevent stalling and loss of electrical power due to defective alternator wiring connections.

1980-81 Volkswagen Rabbits and Pickup Trucks. NHTSA influenced the recall of 133,000 Volkswagen vehicles to install a filler pipe valve to prevent gasoline from spewing out of the filler neck when the gas cap is removed.

1970-74 Fiat 124's. Under a consent order, 140,000 Fiat vehicles were recalled to check for undercarriage corrosion which might impair the attachment of the steering box, idler arm mounting, front upper control arms, or rear trailing arms.

General Motors Station Wagon Rear Defrosters. On January 22, 1981, NHTSA made an initial determination that a safety related defect existed in the rear-window defrosters on GM intermediate size station wagons manufactured during calendar year 1979. The apparent defect resulted in unexpected shattering of the tailgate window. Following the initial determination, General Motors announced the recall of approximately 80,000 vehicles.

Toyota Hi-Lux Pickup Trucks. On August 25, 1981, NHTSA made an initial determination that a safety-related defect existed in 1979 Toyota Hi-Lux pickup trucks. These vehicles exhibited a severe front-end shimmy under certain driving conditions. Following the initial determination, Toyota announced the recall of approximately 85,000 pickup trucks.

1979-81 M.A.N. Articulated Buses. On September 2, 1981, NHTSA made an initial determination that a safety-related defect existed in the rear stepwell configuration of A.M. General M.A.N. articulated buses, a defect that could result in passenger leg or foot entrap-

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ment. The initial determination involved 399 buses that were distributed during 1978-79 and in service with 11 transit authorities. (On October 13, 1981, A.M. General agreed to conduct a recall.)

Compliance Testing

NHTSA tested 183 vehicles for 284 performance requirements related to 14 federal motor vehicle safety standards and regulations. In addition, 4,732 tires and 2,486 items including safety belts, lighting equipment, and motorcycle helmets were subjected to performance tests related to eight safety standards and regulations. The 1981 testing resulted in 7 percent motorcycle helmet failures and 6 percent equipment failures.

Fifty-four vehicles were tested to determine their fuel system integrity. Two vehicles, a Volkswagen Rabbit and a Renault LeCar, failed to meet the requirements.

A new standard for child restraint systems became effective January 7, 1981. A compliance test procedure was developed, a competitive contract was awarded, and preparations were made for the first compliance testing in early 1982.

Three of four buses tested for school bus seating and crash protection (FMVSS 222) failed to meet the test requirements. Four of five buses tested for school bus body joint strength (FMVSS 221) failed to meet the test requirements.

A total of 92 compliance investigations were conducted and 33 civil penalties were imposed on 27 manufacturers.

Odometer Tampering

NHTSA continued its odometer enforcement program, confirming odometer fraud in 92 investigations conducted in 21 states. During these investigations, the mileage on at least 417 vehicles was found to have been rolled back. Twenty-two cases involving large-scale odometer tampering were turned over to the Department of Justice for criminal prosecution and civil penalties were assessed against 41 dealers with fewer violations. In addition, 10 cases were referred to state enforcement agencies and the results of 19 investigations were given to consumers so they could take private civil actions to recover damages.

A concentrated enforcement effort in the Southeastern part of the country resulted in North Carolina, South Carolina, and Georgia enacting regulations to reduce odometer fraud by requiring odometer readings on all vehicle title transfer documents.

Fuel Economy Enforcement

Model year 1981 was the first year in which a manufacturer, other than a low volume manufacturer, projected a corporate average fuel economy which fell short of the federal fuel economy standard of 22.0 mpg. The manufacturer, Jaguar-Rover-Triumph, predicted an average of 18.6 mpg. However, the potential civil penalty of more than \$60,000 related to this 3.4 mpg shortfall was offset by fuel economy credits earned by the manufacturer in model year 1978.

Litigation

Center for Auto Safety v. Lewis (FMVSS 208 deferential). On July 2, 1981, the U.S. Court of Appeals for the District of Columbia denied the Center for Auto Safety's motion for reversal of the Secretary's April 6, 1981, order postponing for one year the effective date of Federal Motor Vehicle Safety Standard 208's automatic restraint for large cars and granted the government's motion to dismiss this petition for review as untimely.

Center for Auto Safety v. Peck, et al. On August 12, 1981, the Center for Auto Safety filed a petition in the U.S. Court of Appeals for the District of Columbia seeking review of the agency's decision to revoke Federal Motor Vehicle Safety Standard 128, "Fields of Direct View." The suit alleged that the agency made several procedural errors in revoking the standard. After NHTSA issued a new rulemaking notice inviting further comment without admitting any procedural error, the Center for Auto Safety voluntarily moved to dismiss the petition for review. (The Court granted the motion to dismiss on October 15, 1981.)

Center for Auto Safety v. NHTSA (Fuel Economy). On July 25, 1981, the Center for Auto Safety filed a petition for review of NHTSA's denial of its administrative petition for reconsideration of the agency's withdrawal of an advance notice of proposed rulemaking on post-1985 fuel economy standards. (At the end of the year the agency's motion to dismiss was pending before the U.S. Court of Appeals for the D.C. Circuit.)

U.S. v. McDonald Chevrolet and Oldsmobile, Inc. In a subpoena enforcement action arising from an odometer tampering investigation, the government prevailed. The U.S. District Court for the Northern District of Georgia ordered the subpoena enforced in April 1981, and the U.S. Court of Appeals for the Fifth Circuit affirmed. However, McDonald Chevrolet refused to produce the subpoenaed documents, despite the court's order, and suggested that they may have been

destroyed. The government's motion for an order citing the defendants for contempt of court was pending before the District Court.

United States v. Fiat Motors of North America, Inc. On October 15, 1980, the U.S. Court of Appeals for the D.C. Circuit denied a petition submitted by Fiat Motors of North America, seeking reversal of a ruling by the District Court in *U.S. v. Fiat*. On July 10, 1981, the government and Fiat entered into a settlement agreement in which Fiat agreed to recall 1972-74 model 124 Fiat automobiles for an undercarriage corrosion defect and to issue safety notification letters to owners of 1970-71 model 124 Fiats.

Waddington v. Ford. Plaintiffs challenged the adequacy of the remedy in the Pinto gas tank defect investigation settlement and also requested further investigation of the fuel systems of other Ford vehicles. The government's motion in district court to dismiss or, alternatively, for summary judgment was pending.

Ford Motor Company v. DOT. On December 31, 1980, Ford Motor Company agreed to notify over 20 million vehicle owners and to provide a safety warning label as a corrective action to conclude NHTSA's Ford transmission safety defects investigation. Subsequently Ford and NHTSA signed a voluntary dismissal of Ford's action seeking judicial review of the agency's investigation. The District Court entered an order dismissing the action on May 7, 1981.

U.S. v. B & B Autosport. In a suit to prevent the importation of unsealed passenger car headlamps not meeting Federal Motor Vehicle Safety Standard 108, an amended complaint was filed in the U.S. District Court for the Northern District of New York.

U.S. v. Seal Enterprises. A complaint was filed in July 1981 against an importer and distributor of non-complying and uncertified turn signal flashers.

Traffic Safety Statistics

Reliable accident data are a key to identifying safety problems and verifying the effectiveness of attempted solutions. NHTSA's National Center for Statistics and Analysis identifies safety problems to aid the develop-

ment of effective motor vehicle and highway safety countermeasures and to provide a data base for program evaluations. It also helps the agency staff by providing information so accurate responses can be made to requests from Congress, states, local governments, motor vehicle manufacturing and highway safety industries, and others. Data collection and analysis activities include the use of state and local records and of sampling techniques that provide information on occupants, vehicles, pedestrians, injuries, collision types, environmental factors, and exposure to accident risks.

Significant fiscal year 1981 accomplishments of the Center included:

- Operation of the fatal accident reporting system, providing a continuous census of approximately 45,000 fatal motor vehicle accidents per year;
- Operation of 30 sites of the national accident sampling system, which collected detailed information on 7,000 accidents;
- Analysis of approximately 2,000 pedestrian accidents;
- Investigations of high interest accidents, such as school bus fatal crashes and vehicles with new safety equipment; and
- Responding to more than 3,000 requests for highway safety information.

Administration

Well managed programs and resources are indispensable to the effective performance of NHTSA's highway and motor vehicle safety responsibilities. In fiscal year 1981, NHTSA's efforts to reduce costs and to improve efficiency resulted in savings of \$6.68 million. Of this amount, \$735,000 was returned to the U.S. Treasury and \$5.94 million was reapplied to priority agency programs.

The agency's total employment decreased from 874 full-time permanent positions in fiscal year 1980 to 797 full-time permanent positions in fiscal year 1981. Despite the decrease in employees, there were achievements in equal employment opportunity. Female representation in grades 13-15 increased from 24 to 26, and there were two new upward mobility placements, one of which was a black female.

Urban Mass Transportation Administration

The Urban Mass Transportation Administration (UMTA) is responsible for carrying out the Department's mandate to improve urban mass transportation. It is the principal source of federal financial assistance to help both urban and non-urban areas plan, develop, and improve mass transportation systems.

The more significant activities of UMTA during fiscal year 1981 included issuing new regulations that returned the method of providing transportation services for handicapped persons to communities as a local option, eliminating price offsets in bids for advance design buses, and proposing the elimination of mandatory bus specifications. Other significant activities included the development of an investment strategy policy for capital programs to foster efficiency and productivity.

Transit Assistance Grants

Total obligated funds for UMTA's various transit assistance programs reached an all time high of \$4.15 billion, surpassing the previous year's level by 4.6 percent.

Obligated funds included: Section 3 urban discretionary grants, \$1,925,000,000; Section 5 urban formula grants, \$1,490,824,354; interstate transfer (transit), \$614,855,408; federal-aid urban systems, \$49,676,329; Section 17 emergency rail operating assistance, \$850,221; and Section 18 non-urban formula grants, \$70,000,000.

A bus purchase program was entered into with the Pennsylvania Department of Transportation for the purchase of 1,000 buses. The first increment was executed in fiscal year 1981. Grants totaling \$46 million for the purchase of 352 buses for 16 transit operators throughout the state were approved. The total federal

share was to be \$128 million. The funds were to be distributed in three increments.

Urban Discretionary Grants

Section 3 funding is distributed by categories. The largest grant categories were rail modernization and extensions of existing rail systems (\$926 million or 48 percent of program funds) and bus improvements (\$565 million or 29 percent). An additional \$42 million was obligated for the urban initiatives program, which combined mass transit improvements with community development.

Section 3 funds also provided \$393 million for new starts. These funds permitted continued work on new rapid transit projects in Atlanta (Phase B-1), Baltimore, and Miami and the light rail systems in Buffalo and Portland, Oregon. Also funded were preliminary engineering studies for downtown circulator systems in Miami and Detroit.

Urban Formula Grants

With the exception of the formula bus capital funds, Section 5 funds are available for capital or operating assistance, but most transit agencies elect to apply the money to operating needs. A total of \$1.129 billion was applied to operating costs and \$361.3 million to capital needs, including \$327 million of formula bus capital funds.

Interstate Transfer Grants

During the year, \$614.9 million was obligated for transit projects under the interstate transfer program. Twenty interstate withdrawal requests were approved, which is the largest number of approvals in any one year. The largest recipient of these funds was the Massachusetts Bay Transportation Authority, which is constructing a three-mile extension of its Red Line rapid transit route northwest from Harvard Square. Other rail extensions funded included Chicago Transit Authority's O'Hare Airport extension and the new Portland, Oregon, light rail project.

Other Transit Assistance Grants

The federal-aid urban systems program provided \$49.7 million for urban transit. Small urban and rural areas received \$70.0 million for capital and operating assistance from the non-urban formula grants program.

In addition, the Section 17 program, which helps to defray costs imposed on some transit agencies because of the railroad reorganization that led to the formation of Conrail in 1976, provided \$850,000.

Litigation

American Public Transit Association (APTA) v. Lewis, Court of Appeals for the District of Columbia Circuit. APTA and 12 of its members brought this suit against UMTA, the Department of Transportation (DOT), and the Department of Health, Education and Welfare (HEW) to challenge DOT regulations and HEW guidelines implementing section 504 of the Rehabilitation Act. The trial court upheld the validity of the regulations. However, the appeals court reversed the trial court's ruling, holding instead that the mass transit provisions of DOT's regulation exceeded DOT's authority to enforce section 504 of the Rehabilitation Act. The appeals court sent the case back to DOT for further action. DOT subsequently suspended the regulation and issued an interim final rule on transportation for handicapped persons that requires transit authorities to undertake special efforts for handicapped persons.

Dopico v. Goldschmidt and Disabled in Action v. Goldschmidt, U.S. District Court for the Southern District of New York. These consolidated suits were brought by wheelchair users who alleged that they had been denied access to public mass transportation in New York City and who sought a major overhauling of the city's transit system to provide greater accessibility for handicapped persons. They sued, among others, UMTA and numerous state and local entities. The court rejected the wheelchair users' claims and found, among other things, that they had no right to sue the local entities for the kind of relief sought and that the decisions and actions of the federal government is continuing to provide New York City with financial assistance were reasonable and in accordance with the law.

Cohen v. Massachusetts Bay Transportation Authority (MBTA), U.S. District Court for Massachusetts. This case was brought by transit users against UMTA and MBTA seeking to halt proposed service reductions in the Boston area on the grounds that the MBTA did not give adequate notice of the reductions or meet other public participation requirements of Section 5(i)(3) of the Urban Mass Transportation Act. The trial court ruled that users had no right to sue to enforce Section 5(i)(3) and that MBTA had complied with UMTA's public participation requirements. The appeals court agreed that MBTA had

satisfactorily complied with Section 5(i)(3) but held that transit users did have the right to sue to enforce Section 5(i)(3). The case has been dismissed by stipulation of the parties.

Transportation For Handicapped Persons

On July 20, 1981, the Department of Transportation's interim final rule on transportation for handicapped persons was published.

The rule required grantees to certify that their areas were making special efforts to provide transportation that handicapped persons could use. As guidance on what level of special effort was required, the rule included an appendix of advisory information. This appendix was a revised version of an advisory appendix to UMTA's 1976 regulations on transportation for elderly and handicapped persons. The advisory appendix indicated that the choice of *how* to provide handicapped persons with transportation which they could use was a matter of local option.

In explaining what level of special effort was required, the advisory appendix gave three illustrations of adequate special efforts:

- Spending an amount equal to 3.5 percent of the financial assistance received under Section 5 of the Urban Mass Transportation Act for handicapped transportation projects;
- Purchasing only wheelchair-accessible fixed-route equipment until one-half of the fleet is accessible; and
- Providing a system of any design that would assure every wheelchair user and semiambulatory person 10 round trips per week at fares comparable to local bus fares.

The three illustrations were not regulatory standards and did not exhaust all the valid approaches.

After analyzing the public comments on the interim rule (comments were due by September 18, 1981), DOT was expected to issue a proposed permanent regulation.

Transfer of Conrail Commuter

The Northeast Rail Service Act of 1981 provided for the transfer of commuter services from Conrail to commuter authorities and a newly created corporation, Amtrak Commuter. The Act also authorized \$50 million to facilitate this transfer.

UMTA and the Federal Railroad Administration were drafting a notice of proposed rulemaking to provide for the equitable distribution of the \$50 million to commuter authorities and Amtrak Commuter.

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Vehicles, Equipment, and Subsystems

A new bus equipment introduction program allowed operators to make their own determination of the operating and maintenance benefits of improved or innovative features or subsystems in new buses. UMTA's current paratransit efforts were aimed at demonstrating how relatively small vehicles, which are accessible to wheelchair passengers, could be developed from modification of a mass produced vehicle chassis.

Energy conservation and propulsion technology efforts included continued research on the flywheel energy storage system, a demonstration of emergency "off-wire" propulsion for electric trolley buses, evaluation of two dual propulsion (diesel and electric) European trolley coaches, a test and evaluation of an electric trolley bus with different controllers and motor, and a lead acid battery bus evaluation in New York.

Computer and Communication Technology

Computer assistance is directed toward the growing demand for fixed and complex paratransit services by providing "off-the-shelf," low-cost, highly transferable computer packages. The automatic vehicle monitoring program provides battery powered transmitters along bus routes and associated communications and display units onboard vehicles and in a central control facility to assist in dispatching and routing buses along heavily traveled routes.

Urban Rail Construction and Rehabilitation

Significant improvements have occurred in tunnel construction with the use of precast tunnel liners in New York and slurry wall design and operational improvements developed through the subway environment design validation study in Washington. Improvements in rail transit system management procedures using risk allocation guidelines resulted in projected savings of millions of dollars in insurance premiums for the Southern California Rapid Transit District. Major efforts in rehabilitation and maintenance were initiated in New York for development of nondestructive testing of old tunnel linings and in Washington for development of improved track maintenance procedures and training practices.

Wheel and Rail Dynamics

Two studies were conducted to examine the feasibility of steerable trucks on urban railcars—one implemented hardware on the Port Authority Transportation Cor-

poration system in the Philadelphia area, and the other awarded a grant to Port Authority Trans-Hudson in New York to study the effects of wheel profile on wheel wear and stability.

Urban Rail Noise Abatement

An urban rail noise abatement program was conducted by the transportation Systems Center for UMTA. The program concentrated on the use of existing technology to produce quieter urban rail systems at minimum cost. Fiscal year 1981 accomplishments included the following: solution of the Washington transit system's brake squeal; reducing propulsion subsystems noise for the New York and Washington transit systems; controlling groundborne noise and vibration in Washington, Baltimore, and San Francisco; and evaluation of resilient rail fasteners for the Boston transit system.

Railcar Standardization

Most of the second phase of the railcar standardization program was completed, including the publication of a series of documents that will assist rapid rail systems in reducing or stabilizing acquisition and operating costs.

Work was completed on a study of the feasibility of installing lifts on existing commuter and light rail vehicles and on a study of railcar to station platform gap problems.

Vehicle Equipment Technology

UMTA activities in vehicle and equipment technology development placed emphasis on providing near-term solutions to the day-to-day problems of operating and maintaining a rapid rail transit system, including development by the Chicago Transit Authority and Port Authority Transportation Corporation of improved pass reader and ticket vendor systems, development of a universal rail-mounted snow removal vehicle, and evaluation of reports on fare collection systems and escalator design features.

Automated Guideway Systems

The Morgantown, West Virginia, people mover system, the Department of Transportation's first effort to develop an automated self-service transit system, continued to provide excellent service during the year. The 21-passenger, driverless, electrically powered, rubber-tired vehicles, operating at intervals of 15 seconds, performed with a service availability of over 98 percent.

Safety Research

A preliminary emergency preparedness guidelines document, begun in 1980, was completed; and a report entitled *Annotated Bibliography of Rail Transit Safety, 1975-1980, With Emphasis on Safety Research and Development* was published. Also begun was a study of emergency evacuation procedures for the elderly and handicapped and research on transit slips and falls.

Cooperative Research and Development

UMTA's cooperative research and development program pursues research on eight to ten priority projects solicited each year from a cross-section of the transit industry. The first year's program included projects on transit bus operator selection, on training for dealing with stress, and on improved bus energy efficiency and productivity.

Also funded were preliminary engineering studies for the Detroit light rail project and for rapid rail systems in Los Angeles and Honolulu.

The downtown people mover demonstration program was terminated. However, Congress appropriated limited funds for the Miami (\$11.5 million) and Detroit (\$8 million) systems, since they were considered integral parts of large transportation systems in those cities. Both have now completed the required preliminary engineering and environmental impact reviews and have selected manufacturers.

Planning Assistance

Planning assistance was focused on the evaluation of existing transit services to identify areas where efficiency and cost-effectiveness could be increased to reduce operating deficits. Guidelines and analytic procedures for bus system monitoring and bus costing were published.

Regulations on the urban transportation planning process were issued; and policy guidance for new urbanized areas established as a result of the 1980 census were issued, to streamline the planning process and reduce red tape.

A cost-effectiveness study for utilizing interstate transfer funds was initiated in the southwest corridor in Chicago.

Planning Methods and Support

Work was initiated in developing analytic methods that could be used on personal microcomputers. This would significantly lower the cost and simplify the analysis

process for local transportation and transfer operations planning.

Transit Management

Major transit management projects were completed, including providing transit systems with a standardized operator training program which is currently being used in over 150 agencies throughout the country and which is being modified for use abroad. The concept of regional training was introduced, with UMTA assistance, to meet the common needs of transit agencies in the western states.

A demonstration of an automatic bus diagnostic system was underway in New York, using one garage and 40 instrumented buses. The computerized system is used for fault identification and isolation in diesel powered buses and their subsystems.

Service and Methods Demonstrations

UMTA's service and methods demonstrations program has been recognized by the Urban Consortium for Technology Initiatives for outstanding promotion of transportation innovation and responsiveness to the needs and problems of local government. In addition, the University of Wisconsin, reporting on a survey of planners and transit operators, identified the program as one of "the two most important contributions made by UMTA to transportation planning."

Major service and methods demonstration program activities during the year included:

- Continuing expansion of user side subsidies. Many small and medium size communities were given information for applying the concept to low income as well as to elderly and handicapped persons.
- Continuing improvement in taxi regulation. Taxi regulation revisions were documented in several cities and a forum provided an exchange of information on innovative taxi services.
- Providing information on a range of options which local communities can use in developing service for the handicapped as an alternative to fully accessible fixed route service.
- Compiling information to help guide local agencies through increasingly difficult fare policy deliberations, as the fare box is once again gaining attention as a revenue source for transit systems.
- Monitoring a 10-mile freeway contraflow lane reserved for buses and pre-registered vanpools which has attracted interest in Houston, Texas. The growth of

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patronage on this facility was extraordinary, growing from about 2,000 daily users to 10,500 in 18 months. Houston was considering similar priority facilities in other freeway corridors.

- Increasing the use of timed transfer, the system whereby bus routes and schedules are coordinated so that transfer time is minimized. Timed transfer was proving to be an attractive service feature, producing significant ridership increases in suburban areas. Although complete data was not yet available, it was believed that this type of service improvement was more cost-effective than traditional service extensions.

Program Evaluation

Program evaluations or studies were undertaken of the magnetic levitation and propulsion projects, the effects of phasing out operating assistance for mass transit, the urban initiatives program, and of federal and state administration of the UMTA funded program to provide transit vehicles for nonprofit organizations.

Policy Research

The university research and training program funded 22 one-year project grants for research on a variety of topics. Funding was continued for five ongoing research and training program grants.

In seeking to expand opportunities for minority institution participation in the university program, UMTA funded a second Summer Faculty Workshop for minority institution faculty, to provide for participant involvement in practical research projects dealing with an important urban transportation issue. Another aim was to develop the participants' research management skills.

UMTA Circular 4900.2A, Administrative Requirements for University Research and Training Grants, was revised.

A report, "*Urban Rail in America: An Exploration of Criteria for Fixed-Guideway Transit*," was completed. The report provides an overall perspective on the current status of urban rail and a method for assessing the future rail needs of any specific location.

Management Information Systems

A new UMTA management information system was installed. The new system provides management data on programs, projects, and resources.

Civil Rights

Over 482 UMTA grantees continued their furtherance of federal civil rights mandates by implementing approved equal employment opportunity, Title VI (Civil Rights Act of 1964), and minority business enterprise programs. These plans help to ensure that the human resource potentials of local economies are tapped for their full productive capabilities and that nondiscrimination characterizes all UMTA programs.

Based on data provided by UMTA grantees subject to 49 CFR Part 23, "Participation by Minority Business Enterprise in Department of Transportation Programs," over \$744 million was awarded to minority-owned firms and \$8.7 million was awarded to female-owned enterprises.

In addition, grantees and their contractors deposited over \$8.4 million in minority-owned banks participating in the federal minority bank deposit program, a 17 percent increase over fiscal year 1980.

In keeping with its policy of reducing federal requirements, UMTA's Circular 1160.1 was being revised to significantly reduce the mapping and informational requirements imposed on UMTA grantees. The revisions will reduce cost and time for grantees for preparing their submissions and will expedite the Title VI review and certification process.

Approximately 154 minority and female members were added to transit boards throughout the country. The number of minority and female chief executive officers increased to 94.

A study, conducted by an UMTA consultant, of senior managerial positions in the transit industry revealed underrepresentation among women and minorities and provided recommendations for correcting these deficiencies. The data provided the basis for recommendations on training, recruitment, new hires, and promotions of women and minorities in transit.

UMTA received 118 civil rights complaints against UMTA grantees and their contractors during the year. In conjunction with the Office of the Secretary, 49 complaints were closed.

A plan for the prevention of sexual harassment in the work force was developed. Internal equal employment opportunity and personnel representatives were trained to use the sexual harassment training module developed by an UMTA consultant.

Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation was created in 1954 to construct the U.S. facilities for the St. Lawrence Seaway project. Since 1959, when the Seaway opened to navigation by ocean-going ships, the Seaway Corporation has been responsible for operation, maintenance, and development of that part of the Seaway between Montreal and Lake Erie which is within the territorial limits of the U.S.

Unlike most government agencies, the Seaway Corporation is self-sustaining. All operation, maintenance, administrative, and capital improvement costs are paid from revenues obtained from tolls charged to vessels which transit the system.

A total of 50.6 million metric tons of cargo moved through the Montreal-Lake Ontario section in 1981 on 4,322 commercial ships. This tonnage represented an increase of 2.3 percent over 1980. While lake vessel transits were as high as the previous year, ocean ship transits in 1981 declined by 373, due to a slackening of grain exports and excess capacity on competing U.S. transportation routes.

Had it not been for a disappointing grain volume, overall Seaway cargo movements during 1981 might have shown a much greater increase. The most significant factors affecting major commodity movements were high interest rates, the strength of the dollar against foreign currencies (which encouraged imports and reduced exports), and the condition of the U.S. and overseas economies in general.

Grain tonnage declined 9 percent. Continuation of the partial embargo on Soviet grain sales in the first quarter of 1981 and the late re-entry of the Soviets into U.S. export markets accounted in part for the reduced volume of U.S. cargoes. The Seaway labor scene was marred by a 10-day strike in April by deck officers of the

U.S. lake fleet and by a two-week strike in September by grain handlers at Thunder Bay which curtailed Canadian grain shipments.

Total bulk cargoes in 1981 edged upward to 47.1 million metric tons, despite the downturn of grain traffic. Iron ore was up 18 percent, due to U.S. Steel producers replenishing their inventories and stockpiling for increased production from the very low 1980 level of activity. Government aid cargoes rose 44 percent, but other bulk cargoes fell 15 percent.

Coal exports through the Seaway in 1981 soared to a new Seaway record of 1.6 million metric tons. This was because of a tremendous overseas demand for U.S. export coal, collier congestion at ports on other U.S. seacoasts, and effective promotional efforts by the Great Lakes maritime community.

General cargo through the Seaway in 1981 climbed 30 percent—the first gain registered by this category since 1977. While container tonnage dropped substantially, reflecting the absence for the first time in many years of a regularly-scheduled container-line service, iron and steel imports surged to 3 million tons.

The gain in imported iron and steel (up 41 percent) reflected the excess steel production capacity in world markets, the strength of the dollar abroad, and renewed confidence by European producers in the application of the U.S. trigger price mechanism.

Besides moving over 50 million tons of cargo through the U.S. locks near Massena, N.Y., the Seaway Corporation registered these important accomplishments in 1981: facilitating the Seaway's second earliest opening on March 25; managing one of the safest and most orderly Seaway closings during November and early December; operating the Seaway for 271 days, equaling the all-time records set in 1975 and 1980; and completing a million-dollar maintenance program at the U.S. locks.

Additional Seaway Corporation accomplishments in 1981 included: the completion of a major study of future lock maintenance requirements; completion of 67 percent of the reconstruction work on the administrative building in Massena, which was severely damaged by arsonists in 1980; and the consolidation of offices in Washington, D.C., to reduce staff and improve efficiency. In the latter change, the Office of Systems and Economic Analysis and the Office of Comprehensive Planning were consolidated into a new Office of Plans and Policy Development. The new office included the functions of seaway systems analysis and engineering research and planning.

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Seaway Corporation development activities in 1981 included: additional review of the Army Corps of Engineers' final Seaway navigation season extension feasibility report, which covers an eight-year federal study in which the Seaway Corporation participated; the production of several publications to provide the maritime trade with statistical data and to promote Seaway commerce; continued research into an all-weather navigation system on the St. Lawrence River; continued work on a joint U.S.-Canada commodity flow forecast study to help in plans for future Seaway naviga-

tion improvements; and the completion of an important Great Lakes and Seaway system marketing strategy study funded by the Seaway Corporation.

According to the Seaway Act of 1954, the Seaway Corporation is required to submit to the President, for transmission to Congress, a separate annual report based on calendar year results. Single copies of the most recent report may be obtained at no charge from: The Public Information Office, Saint Lawrence Seaway Development Corporation, P.O. Box 520, Massena, New York 13662.

Research and Special Programs Administration

The Research and Special Programs Administration (RSPA) has broad responsibilities for improving the safety and efficiency of all modes of transportation. RSPA has the following goals:

- *Safety.* Minimize loss of life, personal injury, and property damage directly related to transportation.
- *Technology stimulation.* Support the Department's policy initiatives undertaken to stimulate technological advances in transportation.
- *Policy.* Provide information for the establishment of transportation policy consistent with national goals for security, social and economic well-being, energy conservation, and environmental protection.
- *Productivity.* Improve the productivity and service efficiency of intermodal transportation systems and their components.

In pursuing these goals, RSPA performs several functions. It collects, analyzes, and disseminates information on transportation and transportation systems. It performs research and development to provide sound regulations and technological options for safe and efficient transportation systems. It trains people to recognize and handle safety and security problems in transportation and to prevent such problems when possible; and it develops rules for safe handling of hazardous materials and provides for enforcement of those rules.

Hazardous Materials

RSPA serves as the national focal point for assuring safety in the domestic and international transportation of hazardous materials. During fiscal year 1981, RSPA sought to amend burdensome regulations that did not contribute to public safety, while maintaining a strong

role in safeguarding the security of persons and property. Toward this end, the following steps were taken:

- Elimination of 20 packaging specifications determined to be obsolete.
- Elimination of the requirement for carriers to prepare written reports of transportation incidents involving certain low risk hazardous materials, a change expected to result in significant savings to the public without adversely affecting public safety.
- Authorization to use the United Nations shipping descriptions for package markings and shipping paper entries for import or export. This action was intended to improve the ability of emergency response personnel to identify hazardous materials quickly and to transmit information accurately from scenes of accidents involving hazardous materials.
- Completion of the *Emergency Response Guidebook*, defining a system for rapid and accurate identification of hazardous materials and appropriate measures for dealing with their accidental release.
- Reduction of the maximum and average radiation levels permissible in the passenger compartment of aircraft by 50 percent. This action encouraged a shift from passenger-carrying to cargo-only aircraft for radioactive material shipments.
- Initiation of over 29 civil penalty actions in 1980 and collection of a total of \$58,950 in civil penalties. Civil penalties do not involve acknowledgement of guilt.

Pipeline Safety

RSPA is also charged with the responsibility for regulating pipeline transportation. It administers a research and development program to develop the technical and economic information necessary to support its rulemaking and enforcement activities and to assure that equitable protection is provided to the public through controls which are reasonable and workable for the regulated industry. Some of the key achievements of the pipeline safety program in fiscal year 1981 included:

- Providing pipeline safety training to 2,000 persons;
- Designing a management information system for regulatory planning and analysis;
- Collecting, analyzing, and disseminating information on more than 2,000 gas and liquid pipeline incidents;
- Analyzing the safety implications of major design changes for the Alaska Natural Gas Pipeline;
- Evaluating the effectiveness of current methods for testing corrosion control in urban environments;

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- Distributing approximately 500,000 instructional literature documents at courses and seminars; and
- Establishing comprehensive new standards for the siting, design, construction, operation, and maintenance of liquefied natural gas facilities.

Safety Training

The Department's safety training programs are centered around the Transportation Safety Institute (TSI) which is under the operational direction of RSPA. The Institute, which is located in Oklahoma City, Oklahoma, promotes the development of transportation safety and security programs through its training activities. In 1981, the Institute offered 58 separate training courses and seminars. TSI programs are available to federal, state, and local officials as well as industry and foreign officials. At present, TSI has a broad curriculum in the following areas: Aviation Safety; Highway Traffic Safety; Marine Safety; Materials Analysis; Motor Carrier Safety; Urban Mass Transportation; Pipeline Safety; Railroad Safety; Hazardous Materials Transportation Safety; Transportation Emergency Response; and Transportation Security.

Emergency Transportation

RSPA administers an emergency transportation program to provide for continuity of government and operational contingency planning in national defense and support of the regional emergency transportation coordinators. Encompassed within the overall program are communications system development and extensive training activities for the Department's national defense executive reserve and mobilization designees.

RSPA is the Department's focal point for crisis preparedness and management for natural or man-made transportation disruptions. Some key accomplishments in the area of emergency transportation included:

- Conducting one national and ten regional emergency preparedness training conferences, assisting in the development and review of nuclear power plant contingency plans, continued collection of emergency data, and updating of the Department's plans;
- Completing the first phase of the transportation section of the national master mobilization plan and evaluating its adequacy in a major federal interagency readiness exercise;
- Leading negotiations which resulted in the first commitment of non-U.S. NATO commercial airlift assets to support NATO reinforcement requirements; and

- Providing both the chairman and the head of the U.S. delegation for the NATO Civil Aviation Planning Committee.

University Research

To assure that resources of the higher education community are effectively brought to bear on high priority problems critical to long term national transportation planning, the Department has funded a program of university research. Between 1973 and 1981, almost three hundred studies were conducted at over 100 universities. Examples of the results of the university research program include:

Regulatory Research. The Departmental testimony on the Motor Carrier Act of 1980 was based on research performed by the Massachusetts Institute of Technology and seven other universities. Major studies included a study on unregulated trucking experiences in New Jersey and a study demonstrating that regulatory reform of the motor carrier industry would not adversely affect small and rural communities.

Maintenance Construction Technologies. The Department has sponsored several projects on transportation maintenance and construction that have contributed toward the improvement of highways, bridges, safety procedures, tunneling, and rail technology. Of particular note is a study done by Stanford on tunneling problems that often occur in soft ground. Its findings were especially useful in the construction of the Washington, D.C., Metro and resulted in an estimated saving of more than \$2 million.

Rail Research. The rail research program has contributed to the Department's analysis of the rail industry in the areas of safety, planning, regulations, and technology. The program has also served to assist state and local governments in dealing with a broad spectrum of rail related problems. For example, one handbook developed by the University of Tennessee was used by the state of Washington to preserve a branch line of the failing Milwaukee Railroad and thereby save two businesses and 300 jobs.

Safety Research. Research by the University of Utah developed a standard set of test procedures for determining the toxicity of products used in transportation vehicle interiors. The Department coordinated the research with the National Bureau of Standards and the chemical industry and is using it to resolve disputes over unsafe materials (e.g., the BART tunnel fire). Central State University of Ohio, a minority school, produced a method to microencapsulate fire retardants in paints for use in the interior of transportation vehicles. In addition

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to civilian application of the research, the Air Force plans to implement the technology in military aircraft.

Technical Interface with State and Local Governments. Recognizing the need for intergovernmental technology sharing, the Department has supported research and seminars designed to develop information transfer systems for use by state and local governments.

Minority College Outreach. The minority college outreach program has made an effort to nurture quality transportation research and to develop experienced scientists and engineers at minority colleges and universities. From 1973 to 1981, minority colleges were involved in 23 contracts valued at about \$2 million. Research conducted under minority contracts has been used in Congressional testimony on trucking regulation reforms and has contributed to the Department's positions on rural and public transportation and economic regulatory reform.

Navigation

Telecommunication, in the form of both radionavigation and radiocommunication systems, is a major factor in transportation system safety and efficiency. The Secretary of Transportation is the principal federal official for the provision of navigation support to the civilian sector of the U.S. Implementation and operation of the navigation system is the responsibility of the Federal Aviation Administration and the United States Coast Guard. RSPA is responsible for the coordination of long-range plans and acts as the principal executive agent for the Secretary in preparation of the federal radionavigation plan.

Key accomplishments in navigation during the year included:

- Releasing the first edition and initiating the first annual update of the federal radionavigation plan;
- Validating a NAVSTAR GPS 2D computer simulation model and initiating development of a 3D model used in evaluating system performance and receiver design;
- Completing the Vermont Loran-C air navigation project and issuing a final report which demonstrated the capability of the Loran-C navigation system for enroute and non-precision approach air operations;
- Continuing development of a navigation system economic planning model and the updating and collection of the navigation user data base; and
- Establishing a technical data center on radionavigation systems for the purpose of transferring technical information to government, industry, and user groups.

Systems Analysis

The purpose of the systems analysis research program is to provide the planning and decision making tools and techniques needed for dealing with the longer term effects of multimodal transportation on economic systems and its implications for free market operations. Areas of major emphasis included emergency transportation planning for national defense emergencies and natural disasters and multimodal planning for regional economic revitalization.

Accomplishments in systems analysis during fiscal year 1981 included:

- Establishing criteria for the allocation of residual air transportation during national emergencies;
- Completing an analysis of the distribution system of a three-state region, including cost estimates of upgraded and additional terminals for handling coal shipments;
- Completing the testing and transferring to the Federal Highway Administration of a method for the optimal allocation of highway maintenance resources over several budget years;
- Completing the application of hierarchical control methods to urban traffic control; and
- Completing the development and testing of the travel component of a new microcomputer transportation and land use model for use by policy analysts and planners.

Transportation Information

RSPA is responsible for providing Department-wide coordination of transportation statistics, data, and information. The current objective is to reduce costs by 25 percent over a three-year period, by minimizing the resources required by the Department, by maximizing the use of existing data, and by reducing the burden on the public to provide information.

Key accomplishments included:

- Transforming the decision information display system from a demonstration system to an operational system;
- Designing a system (the transportation research information service network) to integrate transportation literature indexing, retrieval, and documentation systems into a single network; and
- Establishing a transportation information locator system as an accessing tool to some 1,000 transportation data bases and sources.

Progress Reports/Research and Special Programs Administration

Transportation Systems Center

The Transportation Systems Center (TSC) continued to provide research, analysis, and development support to the Secretary of Transportation and all the operating administrations in the Department. The Center's activities were divided into six subject areas: air transportation, automobiles and highways, mass transportation, waterborne transportation, rail transportation, and multi-modal planning and policy formulation. Some of TSC's major support activities included:

Aviation. Support was provided to the Federal Aviation Administration in development of an aviation safety analysis system to improve the processing of vital aviation safety information. The resulting improvements in productivity and in accident prevention will provide increased safety for the public. TSC also supported improvements to the nation's air traffic control system.

Automobiles and Highways. TSC provided policy assistance and technical advice to the Office of the Secretary, the Federal Highway Administration, and the National Highway Traffic Safety Administration concerning the state of the domestic motor vehicle industry and its ability to compete with foreign manufacturers, changes in motor vehicle use, safety implications due to the downsizing of the American passenger vehicle fleet, and the effect of vehicle fleet configuration on the Nation's highways. The increase in the fuel efficiency of the domestic fleet has affected the federal and state ability to raise tax revenues, resulting in the need for the development of new mechanisms for financing highway maintenance and repair. Research and analysis in highway cost allocation supported the development of financing policies. Technical and scientific support was provided to the National Highway Traffic Safety Administration in the development of alcohol countermeasures and improved occupant protection, with special emphasis on unrestrained occupants during

crashes and the reasons for the use or non-use of seat belts.

Mass Transportation. Support was provided to the Urban Mass Transportation Administration in its effort to improve service and reduce costs on the country's mass transportation systems. TSC's involvement included research on cost-saving service approaches, procedures to reduce operating and maintenance costs, and technical research concentrating on subsystem development for rail, bus, and automated systems.

Waterborne Transportation. Support was provided to the United States Coast Guard in conducting research which has resulted in improvements in such critical operations as command and control, navigation, and oil spill clean up.

Rail Transportation. Support was provided to the Federal Railroad Administration, including analyses of the economic and social impacts of proposed railroad mergers. The Federal Railroad Administration is responsible for establishing and enforcing safety regulations for track, equipment, and operators. TSC supports these activities through accident analyses and performance evaluations to provide a basis for proposed revisions to existing standards which will be both cost effective and enforceable. Particularly important was the development of scientific and engineering bases for more comprehensive and cost effective track standards.

Multimodal Planning and Policy Formulation. The investment, regulation, and subsidization activities of the federal government have important effects on the U.S. transportation industries. TSC supported the Office of the Secretary in assessing the impacts of regulatory changes on carriers, shippers, the public, and local communities. TSC also played a key role in performing an analysis of the economic problems of the transportation supply industries (e.g., the automotive industry). It also provided an assessment of waterway user charges and their potential impacts on intermodal freight competition.

Appendix

TABLE I. U.S. Department of Transportation Budget Authority, Obligations, and Outlays, Fiscal Year 1981.

(dollars in millions)

| <i>Organization</i> | <i>Budget Authority</i> | <i>Obligations</i> | <i>Outlays</i> |
|--|-------------------------|---------------------|---------------------|
| Office of the Secretary | 46 | 45 | 52 |
| United States Coast Guard | 2,035 | 1,999 | 1,854 |
| Federal Aviation Administration | 3,412 | 3,239 | 3,158 |
| Federal Highway Administration | 9,117 | 9,105 | 9,131 |
| Federal Railroad Administration | 2,850 ¹ | 2,742 ¹ | 2,790 ¹ |
| National Railroad Passenger Corporation | 881 | 851 | 851 |
| National Highway Traffic Safety Administration | 191 | 266 | 278 |
| Urban Mass Transportation Administration | 4,662 | 4,510 | 3,855 |
| Saint Lawrence Seaway Development Corporation | — | 11 | (1) |
| Research and Special Programs Administration | 31 | 26 | 30 |
| Office of the Inspector General | 15 | 22 | 11 |
| SUBTOTAL | 23,239 | 22,816 | 22,010 |
| Proprietary Receipts from the Public | (98) | — | (98) |
| TOTALS | 23,141 ² | 22,816 ² | 21,912 ² |

¹Includes \$2,126 million for settlements of railroad litigation.

²Excludes Maritime Administration.

TABLE II. U.S. Department of Transportation Employment in Authorized Full-Time Permanent Positions, Fiscal Year 1981.

| <i>Organization</i> | <i>Positions</i> |
|--|---------------------|
| Office of the Secretary | 1,087 |
| United States Coast Guard | 45,241 ¹ |
| Federal Aviation Administration | 41,259 |
| Federal Highway Administration | 3,776 |
| Federal Railroad Administration | 1,259 |
| National Highway Traffic Safety Administration | 743 |
| Urban Mass Transportation Administration | 547 |
| Saint Lawrence Seaway Development Corporation | 178 |
| Research and Special Programs Administration | 774 |
| Office of the Inspector General | 421 |
| TOTAL | 95,285 ² |

¹ Includes 5,481 civilian and 39,760 military positions.

² Excludes Maritime Administration

**TABLE III. U.S. Department of Transportation Full-Time Civilian
Minority and Female Employment, 1971-81.**

| <i>Year</i> | <i>Total</i> ¹ | <i>Minority</i> ¹ | <i>Percent</i> | <i>Total</i> ² | <i>Female</i> ² | <i>Percent</i> |
|-------------|---------------------------|------------------------------|----------------|---------------------------|----------------------------|----------------|
| 1971 | 66,918 | 6,063 | 9.1 | 60,047 | 10,411 | 17.3 |
| 1972 | 66,219 | 6,372 | 9.6 | 61,368 | 10,773 | 17.6 |
| 1973 | 65,227 | 6,248 | 9.6 | 61,851 | 10,316 | 16.7 |
| 1974 | 65,098 | 6,773 | 10.4 | 62,723 | 10,898 | 17.4 |
| 1975 | 68,241 | 7,647 | 11.2 | 64,588 | 11,373 | 17.6 |
| 1976 | 71,679 | 8,989 | 12.5 | 65,758 | 11,745 | 17.9 |
| 1977 | 72,809 | 9,573 | 13.1 | 74,289 | 12,833 | 17.3 |
| 1978 | 71,972 | 9,623 | 13.4 | 73,471 | 12,752 | 17.4 |
| 1979 | 71,040 | 9,807 | 13.8 | 72,139 | 12,650 | 17.5 |
| 1980 | 69,998 | 10,169 | 14.5 | 71,092 | 13,166 | 18.5 |
| 1981 | 58,018 | 9,325 | 16.1 | 58,220 | 12,093 | 20.7 |

¹Minority employment figures and related totals exclude employees in Hawaii and Guam.

²Female employment figures and related totals cover white collar positions only for the years 1972-75, general schedule positions only for the years 1971 and 1976, and all employees for the years 1977-80.

NOTES:

1. Minority data are as of May 31 for 1971-76 and September 30 for all other years.

2. Female data are as of May 31 for 1971 and 1976; October 31 for 1972-75; and September 30 for all other years.

3. Source of the data for 1972-75 was the Civil Service Commission.

TABLE IV. U.S. Coast Guard Financial Statement, Fiscal Year 1981.

| <i>Appropriated Funds</i> | <i>Funds Available¹</i> | <i>Total Obligations</i> | <i>Unobligated Balance²</i> |
|--|------------------------------------|--------------------------|--|
| Operating Expenses | 1,336,973,065 | 1,335,651,238 | 1,321,827 |
| Acquisition, Construction & Improvements | 399,564,858 | 317,101,604 | 82,463,254 |
| Alteration of Bridges | 16,787,436 | 15,221,391 | 1,566,045 |
| Retired Pay | 244,000,000 | 239,127,781 | 4,872,219 |
| Reserve Training | 49,483,000 | 49,256,807 | 226,193 |
| Research, Development, Test and Evaluation | 26,677,178 | 26,268,385 | 408,793 |
| State Boating Safety Assistance | 329,865 | 150,109 | 179,756 |
| Pollution Fund | 39,917,417 | 19,745,356 | 20,172,061 |
| Offshore Oil Pollution Compensation Fund | 16,964,857 | (838,066) | 17,802,923 |
| Deepwater Ports | 172,637 | (8,478) | 181,115 |
| TOTAL | 2,130,870,313 | 2,001,676,127 | 129,194,186 |
| <i>Reimbursements</i> | | | |
| Operating Expense | 23,744,499 | 23,744,499 | —0— |
| Acquisition, Construction, & Improvements | 2,478,225 | 2,234,327 | 243,898 |
| Reserve Training | 29,401 | 29,401 | —0— |
| Research, Development, Test and Evaluation | 620,962 | 476,693 | 144,269 |
| TOTAL | 26,873,087 | 26,484,920 | 388,167 |
| <i>Trust Funds</i> | | | |
| Coast Guard General Gift Fund | 133,043 | 1,509 | 131,534 |
| Surcharge Collection, Sale of Commissary Stores | 472,740 | 221,561 | 251,179 |
| Coast Guard Cadet Fund | 4,664,828 | 4,664,828 | —0— |
| TOTAL | 5,270,611 | 4,887,898 | 382,713 |
| <i>Intra Governmental Revolving Funds</i> | | | |
| Coast Guard Supply Fund | 98,901,738 | 98,458,152 | 443,586 |
| Coast Guard Yard Fund | 58,764,107 | 35,194,746 | 23,569,361 |
| TOTAL | 157,665,845 | 133,652,898 | 24,012,947 |
| <i>Accrued Gross Expenditures—All Years</i> | <i>Total</i> | <i>Direct</i> | <i>Reimbursable</i> |
| Operating Expenses | 1,315,927,513 | 1,293,356,952 | 22,570,561 |
| Acquisition, Construction & Improvements | 213,310,892 | 213,048,393 | 262,499 |
| Alteration of Bridges | 19,242,041 | 19,242,041 | —0— |
| Retired Pay | 239,196,454 | 239,196,454 | —0— |
| Reserve Training | 48,865,983 | 48,834,392 | 31,591 |
| Research, Development, Test and Evaluation | 24,114,600 | 23,289,748 | 874,852 |
| State Boating Safety | 299,691 | 299,691 | —0— |
| Pollution Fund | 23,492,997 | 23,492,997 | —0— |
| Coast Guard General Gift Fund | 1,466 | 1,466 | —0— |
| Surcharge Collections, Sale of Commissary Stores | 221,561 | —0— | 221,561 |
| Coast Guard Cadet Fund | 4,664,828 | —0— | 4,664,828 |
| Coast Guard Supply Fund | 98,957,298 | —0— | 98,957,298 |
| Coast Guard Yard Fund | 33,949,572 | —0— | 33,949,572 |
| Offshore Oil Pollution Compensation Fund | (403,463) | (403,463) | —0— |
| Special Statistical Work Fund | 10,904 | 10,904 | —0— |
| TOTAL | 2,021,852,337 | 1,860,319,575 | 161,532,762 |

TABLE IV. U.S. Coast Guard Financial Statement, Fiscal Year 1981 (continued).¹ Funds available include unobligated balances brought forward from prior year appropriations as follows:

| | |
|--|--------------------|
| Alteration of Bridges | 937,436 |
| Acquisition, Construction, and Improvements | |
| Appropriated Funds | 65,338,920 |
| Reimbursements | 240,938 |
| Research, Development, Test & Evaluation | |
| Appropriated Funds | 1,487,568 |
| Reimbursements | 189,610 |
| State Boating Safety Assistance | 329,865 |
| Pollution Fund | 17,817,507 |
| Coast Guard General Gift Fund | 54,454 |
| Surcharge Collections, Sale of Commissary Stores | 192,719 |
| Coast Guard Supply Fund | 199,112 |
| Coast Guard Yard Fund | 17,883,094 |
| Offshore Oil Pollution Compensation Fund | 8,820,947 |
| TOTAL | <u>113,492,170</u> |

² Unobligated balances remain available for obligation in fiscal year 1982 as follows:

| | |
|--|--------------------|
| Acquisition, Construction & Improvements | 82,226,397 |
| Research, Development, Test & Evaluation | 408,793 |
| Alteration of Bridges | 1,566,045 |
| Pollution Fund | 20,172,061 |
| Coast Guard General Gift Fund | 131,534 |
| Surcharge Collections, Sale of Commissary Stores | 251,179 |
| Coast Guard Supply Fund | 443,586 |
| Coast Guard Yard Fund | 23,569,361 |
| Offshore Oil Pollution Compensation Fund | 17,802,923 |
| Deepwater Ports Liability Fund | 181,115 |
| TOTAL | <u>145,752,994</u> |

TABLE V. Hijacking Attempts on U.S. and Foreign Aircraft, Including General Aviation Aircraft, Calendar Years 1970-80.

| <i>Aircraft Category</i> | <i>Year</i> | | | | | | | | | | |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | <i>1970</i> | <i>1971</i> | <i>1972</i> | <i>1973</i> | <i>1974</i> | <i>1975</i> | <i>1976</i> | <i>1977</i> | <i>1978</i> | <i>1979</i> | <i>1980</i> |
| U.S. | 27 | 27 | 31 | 2 | 7 | 12 | 4 | 6 | 13 | 13 | 22 |
| Foreign | 56 | 31 | 31 | 20 | 19 | 13 | 14 | 26 | 14 | 14 | 19 |
| TOTAL | 83 | 58 | 62 | 22 | 26 | 25 | 18 | 32 | 31 | 27 | 41 |

TABLE VI. U.S. Certificated Route Air Carrier Accidents, Fatalities, Passengers Carried, Passenger Miles Flown, and Passenger Fatality Rate, in Scheduled Domestic and International Passenger Service, Calendar Years 1970-80.

| <i>Year</i> | <i>Aircraft Accidents</i> | | <i>Fatalities</i> | | | <i>Passengers Carried</i> | <i>Passenger Miles Flown (thousands)</i> | <i>Passenger Fatalities Per 100 Million Passenger Miles</i> |
|-------------------|---------------------------|----------------|-------------------|-----------------------|--------------|---------------------------|--|---|
| | <i>Total</i> | <i>Fatal</i> | <i>Passenger</i> | <i>Crew and Other</i> | <i>Total</i> | | | |
| 1970 | 39 | 2 | 2 | 1 | 3 | 171,697,097 | 139,157,806 | 0.001 |
| 1971 | 41 | 6 ¹ | 174 | 20 | 194 | 173,664,737 | 145,678,876 | 0.119 |
| 1972 | 43 | 7 | 160 | 26 | 186 | 188,938,932 | 159,722,015 | 0.100 |
| 1973 | 32 | 6 | 197 | 20 | 217 | 202,207,000 | 171,436,549 | 0.115 |
| 1974 | 42 | 7 | 420 ² | 40 | 460 | 207,449,006 | 173,349,894 | 0.197 ³ |
| 1975 | 28 | 2 | 113 | 9 | 122 | 205,059,571 | 174,173,138 | 0.065 |
| 1976 | 21 | 2 | 36 | 2 | 38 | 223,313,131 | 190,915,721 | 0.019 |
| 1977 | 17 | 2 | 64 | 11 | 75 | 240,326,516 | 206,205,410 | 0.031 |
| 1978 | 19 | 4 | 13 | 3 | 16 | 274,716,000 ^r | 264,932,819 ^r | 0.005 |
| 1979 ^r | 18 | 5 | 323 | 29 | 352 | 316,683,000 | 261,979,204 | 0.123 |
| 1980 ^p | 14 | 1 | 11 | 2 | 13 | 303,200,000 | 283,100,000 | 0.004 |

¹ Includes 2 midair collisions that were not fatal to air carrier occupants.

² Includes 79 passenger deaths that occurred in sabotage accidents.

³ Does not include passenger deaths that occurred in sabotage accidents.

^r Revised

^p Preliminary

TABLE VII. U.S. General Aviation Accidents, Fatalities, Aircraft Hours Flown, Aircraft Miles Flown, Accident Rates, and Fatality Rates, Calendar Years 1970-80.

| Year | Accidents ¹ | | Fatalities ² | Aircraft-Hours Flown (thousands) | Aircraft-Miles Flown (thousands) | Accident Rates ¹ | | | | Fatality Rates | |
|-------------------|------------------------|-------|-------------------------|----------------------------------|----------------------------------|----------------------------------|-------|----------------------------------|-------|----------------------------------|----------------------------------|
| | | | | | | Per 100,000 Aircraft-Hours Flown | | Per Million Aircraft-Miles Flown | | Per 100,000 Aircraft-Hours Flown | Per Million Aircraft-Miles Flown |
| | Total | Fatal | | | | Total | Fatal | Total | Fatal | | |
| 1970 | 4,712 | 641 | 1,310 | 26,030 | 3,207,127 | 18.1 | 2.46 | 1.47 | 0.200 | 5.03 | 0.408 |
| 1971 | 4,648 | 661 | 1,355 | 25,512 | 3,143,181 | 18.2 | 2.59 | 1.48 | 0.211 | 5.31 | 0.431 |
| 1972 | 4,256 | 695 | 1,426 | 26,974 | 3,317,100 | 15.8 | 2.57 | 1.28 | 0.209 | 5.28 | 0.429 |
| 1973 | 4,255 | 723 | 1,412 | 29,974 | 3,686,802 | 14.2 | 2.41 | 1.15 | 0.196 | 4.71 | 0.382 |
| 1974 | 4,425 | 729 | 1,438 | 31,413 | 3,863,799 | 14.1 | 2.31 | 1.14 | 0.188 | 4.57 | 0.372 |
| 1975 | 4,237 | 675 | 1,345 | 32,024 | 3,938,952 | 13.2 | 2.10 | 1.08 | 0.171 | 4.19 | 0.341 |
| 1976 | 4,193 | 695 | 1,320 | 33,922 | 4,172,406 | 12.3 | 2.04 | 1.00 | 0.166 | 3.89 | 0.316 |
| 1977 | 4,286 | 702 | 1,436 | 35,792 | 4,402,126 | 12.0 | 1.96 | 0.97 | 0.159 | 4.01 | 0.326 |
| 1978 | 4,494 | 793 | 1,770 | 39,409 ^f | 4,965,534 ^f | 11.4 | 2.01 | 0.90 | 0.159 | 4.49 | 0.356 |
| 1979 ^f | 4,051 | 682 | 1,382 | 43,417 | 5,470,542 | 9.3 | 1.57 | 0.74 | 0.125 | 3.18 | 0.252 |
| 1980 ^p | 3,799 | 677 | 1,375 | 41,300 | 5,203,800 | 9.2 | 1.64 | 0.73 | 0.130 | 3.33 | 0.264 |

¹ Suicide and sabotage accidents are included in all computations except accident rates (1970-1, 1972-3, 1973-2, 1974-2, 1975-2, 1976-4, 1977-1, and 1978-2).

² Includes air carrier fatalities in accidents involving collisions with general aviation aircraft (1972-5 and 1978-142).

^f Revised

^p Preliminary

TABLE VIII. Federal-Aid Highway Obligations, Fiscal Years 1971-81.

(dollars in millions)

| Funding Category | Year | | | | | | | | | | | TOTAL |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976* | 1977 | 1978 | 1979 | 1980 | 1981 | |
| Interstate | 3,298 | 3,293 | 2,633 | 2,901 | 4,015 | 2,616 | 3,298 | 3,191 | 4,442 | 3,380 | 3,926 | 36,993 |
| ABC ¹ | 971 | 1,036 | 698 | 516 | 425 | 194 | 46 | 17 | 7 | — | — | 3,910 |
| Primary ² | 62 | 60 | 69 | 620 | 1,266 | 725 | 1,174 | 1,320 | 1,440 | 1,605 | 1,752 | 10,093 |
| Secondary ³ | 38 | 42 | 45 | 285 | 483 | 332 | 287 | 364 | 360 | 395 | 456 | 3,087 |
| Urban | — | 11 | 84 | 340 | 368 | 564 | 657 | 854 | 739 | 774 | 892 | 5,283 |
| Bridge | — | 41 | 53 | 38 | 181 | 116 | 196 | 171 | 611 | 770 | 938 | 3,115 |
| Safety | | | | | | | | | | | | |
| Construction | — | — | — | 25 | 263 | 368 | 326 | 332 | 338 | 344 | 338 | 2,334 |
| Emergency Relief | 32 | 44 | 145 | 149 | 144 | 115 | 85 | 105 | 135 | 280 | 122 | 1,356 |
| Other ^f | 210 | 442 | 398 | 312 | 599 | 1,127 | 896 | 781 | 552 | 529 | 551 | 6,397 |
| TOTAL ^f | 4,611 | 4,969 | 4,125 | 5,186 | 7,744 | 6,157 | 6,965 | 7,135 | 8,624 | 8,077 | 8,975 | 72,568 |

¹ Prior to fiscal year 1975, ABC figures include primary, secondary, and urban funds. After fiscal year 1974, ABC figures include urban extension, primary, and secondary funds.

² Prior to fiscal year 1975, primary figures include rural primary and priority funds. After fiscal year 1974, primary figures include rural primary, priority primary, discretionary priority primary, and consolidated primary funds.

³ Secondary figures include only rural secondary funds.

* Includes the Transition Quarter, July 1, 1976 to September 30, 1976.

^f Revised

TABLE IX. Federal Highway Administration Motor Carrier Safety Inspection Activity, Calendar Years 1974-81.

| <i>Year</i> | <i>Inspections Performed</i> | <i>Vehicles Taken Out of Service</i> | <i>Drivers Taken Out of Service</i> |
|-------------|------------------------------|--------------------------------------|-------------------------------------|
| 1974 | 25,939 | 7,867 | 688 |
| 1975 | 16,372 | 4,961 | 425 |
| 1976 | 16,907 | 5,574 | 456 |
| 1977 | 18,730 | 6,985 | 558 |
| 1978 | 25,695 | 9,978 | 597 |
| 1979 | 26,127 | 10,779 | 1,980 |
| 1980 | 29,110 | 9,600 | 3,000 |
| 1981 | 40,747 | 13,143 | 4,184 |

TABLE X. Summary of U.S. Train Accidents and Casualties, Calendar Years 1972-80.

| <i>Category</i> | <i>Year</i> | | | | | | | | | <i>% Change 1979-80</i> | <i>% Change 1975-80</i> |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------------|-----------------------------|
| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | | |
| Number of Train Accidents ¹ | | | | | | | | | | | |
| Collisions | 1,348 | 1,657 | 1,551 | 1,002 | 1,370 | 1,363 | 1,476 | 1,425 | 1,201 | -15.72 | +19.86 |
| Deraillments | 5,509 | 7,389 | 8,513 | 6,328 | 7,934 | 8,075 | 8,763 | 7,482 | 6,442 | -13.90 | + 1.80 |
| Other | 675 | 652 | 630 | 711 | 944 | 926 | 1,038 | 833 | 808 | -19.75 | +13.64 |
| TOTAL TRAIN ACCIDENTS | 7,532 | 9,698 | 10,694 | 8,041 | 10,248 | 10,362 | 11,277 | 9,740 | 8,451 | -13.23 | + 5.09 |
| Number of Casualties in Accidents of all Types | | | | | | | | | | | |
| Trespassers Killed | 537 | 578 | 565 | 524 | 457 | 458 | 492 | 516 | 566 | + 9.69 | - 8.02 |
| Trespassers Injured | 586 | 614 | 674 | 703 | 766 | 689 | 746 | 805 | 728 | - 9.57 | + 3.56 |
| Passengers Killed | 47 | 6 | 7 | 8 | 5 | 4 | 13 | 6 | 4 | -33.33 | -50.00 |
| Passengers Injured | 680 | 503 | 574 | 1,307 | 998 | 503 | 1,252 | 1,001 | 593 | -40.76 | -54.63 |
| Employees on Duty Killed . | 127 | 158 | 140 | 110 | 100 | 114 | 122 | 101 | 97 | - 3.96 | -11.83 |
| Employees on Duty Injured ² | 12,456 | 13,098 | 15,620 | 47,318 | 57,889 | 61,028 | 65,071 | 66,924 | 56,331 | -15.83 | +19.05 |
| All Other Persons Killed ... | 1,234 | 1,174 | 1,196 | 918 | 1,068 | 954 | 1,019 | 806 | 750 | - 6.95 | -18.30 |
| All Other Persons Injured . | 4,208 | 4,039 | 3,950 | 4,978 | 5,678 | 5,647 | 5,476 | 5,396 | 4,594 | -14.86 | - 7.71 |
| TOTAL NUMBER OF PERSONS KILLED .. | 1,945 | 1,916 | 1,908 | 1,560 | 1,630 | 1,530 | 1,646 | 1,429 | 1,417 | - 0.83 | - 9.17 |
| TOTAL NUMBER OF PERSONS INJURED . | 17,930 | 18,245 | 20,818 | 54,306 | 65,331 | 67,867 | 72,545 | 74,126 | 62,246 | -16.03 | +14.62 |

¹ Monetary reporting threshold prior to 1975 was \$750, in 1975 it was increased to \$1,750, in 1977 it was increased to \$2,300.

² Includes lost time cases only prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements—including cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

³ Includes occupational illnesses.

TABLE XI. Summary of U.S. Rail-Highway Grade Crossing Accidents and Casualties, Calendar Years 1972-80.

| <i>Accidents ¹and Casualties ²</i> | <i>Year</i> | | | | | | | | | <i>% Change 1979-80</i> | <i>% Change 1975-80</i> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------------------|-----------------------------|
| | <i>1972</i> | <i>1973</i> | <i>1974</i> | <i>1975</i> | <i>1976</i> | <i>1977</i> | <i>1978</i> | <i>1979</i> | <i>1980</i> | | |
| Accidents at Highway Grade Crossings Involving Motor Vehicles | | | | | | | | | | | |
| Total Accidents | 3,222 | 3,190 | 3,089 | 10,925 | 11,700 | 11,849 | 11,999 | 11,108 | 9,422 | - 15.18 | - 13.76 |
| Number of Persons Killed . | 1,190 | 1,078 | 1,128 | 788 | 978 | 846 | 929 | 727 | 708 | - 2.61 | - 10.15 |
| Number of Persons Injured | 3,201 | 3,215 | 3,166 | 3,600 | 4,343 | 4,455 | 4,120 | 4,019 | 3,534 | - 12.07 | - 1.83 |
| Total Rail-Highway Grade Crossing Accidents and Resulting Casualties | | | | | | | | | | | |
| Total Accidents | 3,379 | 3,379 | 3,278 | 11,354 | 12,144 | 12,299 | 12,435 | 11,552 | 9,763 | - 15.49 | - 14.01 |
| Number of Persons Killed . | 1,260 | 1,186 | 1,220 | 978 | 1,114 | 944 | 1,021 | 834 | 788 | - 5.52 | - 19.43 |
| Number of Persons Injured | 3,285 | 3,306 | 3,260 | 4,168 | 4,831 | 4,649 | 4,256 | 4,172 | 3,662 | - 12.22 | - 12.14 |
| <i>Railroad Casualties</i> | | | | | | | | | | | |
| Passengers on Trains | | | | | | | | | | | |
| Number of Persons Killed . | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | - | - |
| Number of Persons Injured | 0 | 35 | 18 | 96 | 58 | 24 | 18 | 2 | 3 | + 50.00 | - 96.87 |
| Employees on Duty | | | | | | | | | | | |
| Number of Persons Killed . | 1 | 5 | 3 | 2 | 0 | 11 | 2 | 7 | 0 | - | - |
| Number of Persons Injured | 68 | 103 | 102 | 32 | 54 | 193 | 180 | 152 | 75 | - 50.66 | + 134.37 |
| Total Railroad Casualties | | | | | | | | | | | |
| Number of Persons Killed . | 1 | 5 | 3 | 3 | 0 | 11 | 2 | 7 | 0 | - | - |
| Number of Persons Injured | 68 | 138 | 120 | 128 | 112 | 217 | 198 | 154 | 78 | - 49.35 | - 39.06 |

¹All impacts between on-track equipment and highway users were reported beginning in 1975. Prior to 1975, such impacts were reported only if they resulted in a reportable casualty or in \$750 in damages to railroad on-track equipment, signals, track, track structures, or roadbed.

²Include lost time cases only prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements—including cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

**TABLE XII. Alaska Railroad Revenue Freight Traffic, by Commodity,
Fiscal Years 1975-81.**

| Commodity | Revenue Freight Tons (000's) | | | | | | | % Change | % Change |
|---|------------------------------|---------|---------|---------|---------|---------|---------|----------|----------|
| | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1980-81 | 1975-81 |
| Sand and Gravel | N/A | N/A | 699.5 | 727.2 | 637.5 | 396.2 | 1,796.8 | +353.51 | N/C |
| Coal | N/A | N/A | 550.0 | 593.3 | 523.9 | 590.2 | 652.0 | +10.64 | N/C |
| Petroleum, Oil, and Lubricants | 557.4 | 632.6 | 532.3 | 373.9 | 219.6 | 251.7 | 379.1 | +50.62 | -31.99 |
| TOFC/COFC (Piggyback) | 95.3 | 114.2 | 99.7 | 99.5 | 88.7 | 92.4 | 112.5 | +21.75 | +18.05 |
| Forest Products | 119.5 | 124.3 | 82.0 | 67.8 | 55.2 | 108.8 | 100.7 | -7.44 | -15.73 |
| Agricultural Products | 13.2 | 9.4 | 11.5 | 8.2 | 7.1 | 9.9 | 8.1 | -18.18 | -38.64 |
| Manufactured Goods and Miscellaneous Commodities | 1,114.6 | 1,251.1 | 330.3 | 307.8 | 276.9 | 292.1 | 311.9 | +6.78 | N/C |
| TOTAL TONNAGE | 1,900.0 | 2,131.6 | 2,305.3 | 2,177.7 | 1,808.9 | 1,741.3 | 3,362.1 | +93.08 | +76.95 |

N/A—Not Available, included in "Manufactured Goods and Miscellaneous Commodities."

N/C—Not Comparable.

**TABLE XIII. Amtrak Passengers, Passenger Miles, Daily Train Miles, Revenues,
Costs, Deficit, and Ratios, Fiscal Years 1972-81.**

| Category | Year | | | | | | | | | | % Change | % Change |
|---|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------|----------|----------|
| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1980-81 | 1972-80 |
| Passengers (millions) | 13.7 | 14.7 | 16.7 | 15.8 | 16.9 | 19.2 | 18.9 | 21.4 | 21.2 | 20.6 | -2.8 | +50.36 |
| Passenger Miles (billions) . | 2.9 | 3.3 | 4.4 | 3.7 | 3.8 | 4.1 | 4.0 | 4.9 | 4.6 | 4.8 | +4.3 | +65.52 |
| Daily Train Miles (thousands) | 71.5 | 72.9 | 77.0 | 80.8 | 81.5 | 86.5 | 86.4 | 86.5 | 79.0 | 84.8 | +7.3 | +18.60 |
| Operating Revenue (\$ millions) | 152.7 | 177.3 | 242.2 | 246.5 | 268.0 | 311.3 | 313.0 | 381.5 | 436.4 | 506.2 | +16.0 | +231.5 |
| Corporate Costs (\$ millions) | 66.9 | 46.6 | 24.9 | 35.6 | 43.3 | 56.8 | 60.2 | 46.6 | 50.5 | 84.1 | +66.5 | +25.7 |
| Operating Costs (\$ millions) | 239.3 | 272.5 | 413.2 | 524.2 | 630.9 | 776.0 | 830.1 | 951.5 | 1,102.8 | 1,252.5 | +13.6 | +423.4 |
| Total Costs (\$ millions) ... | 306.2 | 319.2 | 438.1 | 559.8 | 674.3 | 832.9 | 890.3 | 998.1 | 1,153.3 | 1,336.6 | +15.9 | +336.5 |
| Deficit ¹ (\$ millions) | 153.5 | 141.9 | 195.9 | 313.3 | 379.3 | 521.6 | 577.3 | 616.8 | 716.9 | 755.6 | +5.4 | +392.2 |
| Revenue/Costs Ratio | 0.499 | 0.556 | 0.553 | 0.440 | 0.398 | 0.374 | 0.352 | 0.382 | 0.378 | 0.421 | +11.4 | -15.6 |
| Federal Subsidy Per Passenger Mile (¢) | 5.3 | 4.2 | 4.4 | 8.3 | 10.9 | 12.7 | 14.4 | 12.6 | 15.6 | 14.6 | -6.4 | +175.5 |

¹ Deficit before federal operating payments, but after state subsidies.

TABLE XIV. Summary of U.S. Motor Vehicle Activities and Fatalities, Calendar Years 1971-81.

| <i>Year</i> | <i>Licensed Drivers (millions)</i> | <i>Registered Motor Vehicles (millions)</i> | <i>Vehicle Miles Traveled (billions)</i> | <i>Traffic Fatalities ¹</i> | <i>Fatality Rate ²</i> |
|-------------------|--|---|--|--|-----------------------------------|
| 1971 | 114.4 | 116.3 | 1,179 | 52,542 | 4.46 |
| 1972 | 118.4 | 122.6 | 1,260 | 54,589 | 4.33 |
| 1973 | 121.5 | 130.0 | 1,313 | 54,052 | 4.12 |
| 1974 | 125.4 | 134.9 | 1,281 | 45,196 | 3.53 |
| 1975 | 129.8 | 137.9 | 1,328 | 44,525 | 3.35 |
| 1976 | 134.0 | 143.5 | 1,402 | 45,523 | 3.25 |
| 1977 | 138.1 | 147.3 | 1,467 | 47,878 | 3.26 |
| 1978 | 140.8 | 153.3 ^r | 1,545 | 50,331 | 3.26 |
| 1979 | 143.3 | 157.3 ^r | 1,529 | 51,093 | 3.34 |
| 1980 ^r | 145.3 | 161.6 | 1,528 | 51,091 | 3.34 |
| 1981 ^p | 148.0 | 165.7 | 1,555 | 49,268 | 3.17 |
| % Change 1980-81 | +1.9 | +2.5 | +1.8 | -3.6 | -5.1 |
| % Change 1971-81 | +29.4 | +42.5 | +31.9 | -6.2 | -28.9 |

¹Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

²Fatalities per 100 million vehicle miles.

^r Revised

^p Provisional

TABLE XV. Summary of U.S. Monthly Traffic Fatalities, Motor Vehicle Mileage, and Fatality Rates, Calendar Years 1976-81.

| Category and Year | Month | | | | | | | | | | | |
|----------------------------------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|
| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec |
| Fatalities¹ | | | | | | | | | | | | |
| 1976 | 3,038 | 2,969 | 3,197 | 3,569 | 4,113 | 3,979 | 4,613 | 4,348 | 3,994 | 4,250 | 3,534 | 3,919 |
| 1977 | 2,738 | 2,877 | 3,497 | 3,730 | 4,060 | 4,320 | 4,960 | 4,586 | 4,250 | 4,560 | 4,148 | 4,152 |
| 1978 | 2,733 | 2,657 | 3,511 | 3,950 | 4,384 | 4,633 | 4,999 | 4,998 | 4,782 | 4,795 | 4,385 | 4,504 |
| 1979 | 3,075 | 3,116 | 4,072 | 4,123 | 4,376 | 4,505 | 4,663 | 4,706 | 4,698 | 4,665 | 4,373 | 4,721 |
| 1980 ^r | 3,432 | 3,271 | 3,645 | 3,731 | 4,482 | 4,935 | 4,848 | 5,401 | 4,498 | 4,350 | 4,257 | 4,241 |
| 1981 ^p | 3,579 | 3,382 | 3,650 | 3,956 | 4,212 | 4,342 | 4,815 | 4,913 | 4,249 | 4,257 | 3,962 | 3,951 |
| % Change 1980-81 | + 4.3 | + 3.4 | + 0.1 | + 6.0 | - 6.0 | - 12.0 | - 0.1 | - 9.0 | - 5.5 | - 2.1 | - 6.9 | - 6.8 |
| % Change 1976-81 | + 17.8 | + 13.9 | + 14.2 | + 10.8 | + 2.4 | + 9.1 | + 4.4 | + 13.0 | + 6.4 | + 0.2 | + 12.1 | + 0.8 |
| Mileage² | | | | | | | | | | | | |
| 1976 | 102.0 | 98.1 | 113.7 | 116.5 | 122.7 | 123.5 | 130.3 | 131.3 | 118.9 | 120.6 | 112.5 | 112.5 |
| 1977 | 102.7 | 102.7 | 120.3 | 121.8 | 129.2 | 129.6 | 136.5 | 136.7 | 124.5 | 127.7 | 118.8 | 116.5 |
| 1978 | 109.6 | 106.8 | 124.8 | 122.5 | 134.1 | 138.6 | 147.9 | 149.1 | 131.1 | 132.6 | 123.4 | 124.3 |
| 1979 | 114.4 | 109.7 | 131.4 | 125.9 | 132.4 | 131.2 | 134.9 | 139.9 | 127.6 | 131.6 | 123.4 | 123.2 |
| 1980 ^r | 117.0 | 107.8 | 125.8 | 126.3 | 131.9 | 132.3 | 136.9 | 139.3 | 128.1 | 133.2 | 124.0 | 125.4 |
| 1981 ^p | 118.1 | 110.3 | 129.2 | 129.5 | 135.1 | 136.8 | 141.2 | 143.3 | 131.5 | 134.9 | 125.6 | 125.7 |
| % Change 1980-81 | + 0.9 | + 2.3 | + 2.7 | + 2.5 | + 2.4 | + 3.4 | + 3.1 | + 2.9 | + 2.7 | + 1.3 | + 1.3 | + 0.2 |
| % Change 1976-81 | + 15.8 | + 12.4 | + 13.6 | + 11.2 | + 10.1 | + 10.8 | + 8.4 | + 9.1 | + 10.6 | + 11.9 | + 11.6 | + 11.7 |
| Fatality Rate³ | | | | | | | | | | | | |
| 1976 | 2.98 | 3.03 | 2.81 | 3.06 | 3.35 | 3.22 | 3.54 | 3.31 | 3.36 | 3.52 | 3.14 | 3.48 |
| 1977 | 2.67 | 2.80 | 2.91 | 3.06 | 3.14 | 3.33 | 3.63 | 3.36 | 3.41 | 3.57 | 3.49 | 3.56 |
| 1978 | 2.49 | 2.49 | 2.81 | 3.23 | 3.27 | 3.34 | 3.38 | 3.35 | 3.65 | 3.62 | 3.55 | 3.62 |
| 1979 | 2.69 | 2.84 | 3.10 | 3.27 | 3.31 | 3.43 | 3.46 | 3.36 | 3.68 | 3.54 | 3.54 | 3.83 |
| 1980 ^r | 2.93 | 3.03 | 2.90 | 2.95 | 3.40 | 3.73 | 3.54 | 3.88 | 3.51 | 3.27 | 3.43 | 3.38 |
| 1981 ^p | 3.03 | 3.07 | 2.80 | 3.05 | 3.12 | 3.18 | 3.41 | 3.43 | 3.23 | 3.16 | 3.16 | 3.14 |
| % Change 1980-81 | + 3.4 | + 1.3 | - 2.8 | + 3.4 | - 8.2 | - 14.7 | - 3.7 | - 11.6 | - 8.0 | - 3.4 | - 7.9 | - 7.1 |
| % Change 1976-81 | + 1.7 | + 1.3 | + 0.4 | - 0.3 | - 6.9 | - 1.2 | - 3.7 | + 3.6 | - 3.9 | - 10.2 | + 0.6 | - 9.8 |

¹ Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

² Billions of vehicle miles.

³ Fatalities per 100 million vehicle miles.

^r Revised

^p Preliminary

TABLE XVI. Summary of Reported Gas Pipeline Failures and Casualties, Calendar Years 1970-80.

| Distribution Lines | | | | Transmission and Gathering Lines | | | Totals | | |
|--------------------|----------|------------|----------|----------------------------------|------------|----------|----------|------------|----------|
| Year ¹ | Failures | Fatalities | Injuries | Failures | Fatalities | Injuries | Failures | Fatalities | Injuries |
| 1970 | 676 | 21 | 202 | 343 | 1 | 16 | 1,019 | 22 | 218 |
| 1971 | 875 | 42 | 365 | 410 | 3 | 24 | 1,258 | 45 | 389 |
| 1972 | 884 | 28 | 294 | 409 | 6 | 36 | 1,293 | 34 | 330 |
| 1973 | 893 | 33 | 333 | 471 | 2 | 19 | 1,364 | 35 | 352 |
| 1974 | 1,017 | 20 | 314 | 460 | 4 | 20 | 1,477 | 24 | 334 |
| 1975 | 979 | 8 | 220 | 394 | 6 | 17 | 1,373 | 14 | 237 |
| 1976 | 1,036 | 53 | 319 | 543 | 10 | 47 | 1,579 | 63 | 366 |
| 1977 | 1,530 | 29 | 420 | 466 | 7 | 30 | 1,996 | 36 | 450 |
| 1978 | 1,555 | 20 | 320 | 533 | 11 | 86 | 2,088 | 31 | 406 |
| 1979 | 1,520 | 33 | 313 | 450 | 12 | 93 | 1,970 | 45 | 406 |
| 1980 | 1,467 | 9 | 269 | 529 | 2 | 41 | 1,996 | 11 | 310 |

¹ Date for calendar years 1974-80 include information from telephonic reports which were not included in data for calendar years 1970-73.

TABLE XVII. Summary of Reported Liquid Pipeline Accidents and Casualties, Calendar Years 1970-80.

| <i>Year</i> | <i>Accidents</i> | <i>Fatalities</i> | <i>Injuries</i> | <i>Commodity Loss (Barrels)</i> |
|-------------------|------------------|-------------------|-----------------|---------------------------------|
| 1970 | 347 | 4 | 21 | 521,849 |
| 1971 | 308 | 1 | 8 | 245,057 |
| 1972 | 309 | 8 | 19 | 360,654 |
| 1973 | 273 | 7 | 8 | 379,365 |
| 1974 | 256 | 10 | 11 | 293,643 |
| 1975 | 255 | 7 | 15 | 319,423 |
| 1976 | 209 | 5 | 5 | 255,037 |
| 1977 | 238 | 3 | 19 | 228,429 |
| 1978 | 256 | 3 | 10 | 280,794 |
| 1979 ^r | 251 | 4 | 13 | 548,669 |
| 1980 | 219 | 3 | 12 | 289,445 |

^r Revised

TABLE XVIII. Hazardous Materials Incidents, by Mode, Calendar Year 1971-80.

| <i>Year</i> | <i>Air</i> | <i>Highway (for hire)</i> | <i>Highway (private)</i> | <i>Railway</i> | <i>Water</i> | <i>Other</i> | <i>Total</i> |
|-------------|------------|-------------------------------|------------------------------|----------------|--------------|--------------|--------------|
| 1971 | 4 | 1,552 | 224 | 343 | 11 | 121 | 2,255 |
| 1972 | 33 | 3,558 | 342 | 333 | 9 | 53 | 4,328 |
| 1973 | 49 | 5,048 | 419 | 409 | 12 | 65 | 6,002 |
| 1974 | 157 | 7,251 | 361 | 616 | 26 | 17 | 8,428 |
| 1975 | 152 | 8,988 | 903 | 676 | 32 | 18 | 10,769 |
| 1976 | 90 | 10,223 | 549 | 982 | 13 | 32 | 11,889 |
| 1977 | 130 | 13,000 | 1,250 | 1,500 | 50 | 20 | 15,950 |
| 1978 | 231 | 15,983 | 565 | 1,191 | 47 | 5 | 18,022 |
| 1979 | 284 | 15,355 | 623 | 1,215 | 34 | 13 | 17,524 |
| 1980 | 233 | 14,042 | 442 | 1,327 | 42 | 29 | 16,115 |

TABLE XIX. Hazardous Materials Casualties (Deaths and Injuries), by Mode, Calendar Year 1971-80.

| <i>Year</i> | <i>Air</i> | <i>Highway (for hire)</i> | <i>Highway (private)</i> | <i>Railway</i> | <i>Water</i> | <i>Other</i> | <i>Total</i> |
|-------------|------------|-------------------------------|------------------------------|----------------|--------------|--------------|--------------|
| 1971 | 0 | 140 | 65 | 21 | 48 | 8 | 276 |
| 1972 | 0 | 198 | 55 | 59 | 0 | 0 | 306 |
| 1973 | 6 | 308 | 45 | 155 | 3 | 13 | 530 |
| 1974 | 9 | 257 | 42 | 606 | 17 | 4 | 935 |
| 1975 | 4 | 402 | 112 | 96 | 2 | 66 | 682 |
| 1976 | 4 | 580 | 53 | 200 | 1 | 0 | 838 |
| 1977 | 9 | 461 | 77 | 234 | 0 | 0 | 781 |
| 1978 | 43 | 550 | 64 | 508 | 10 | 1 | 1,176 |
| 1979 | 13 | 620 | 95 | 228 | 1 | 2 | 959 |
| 1980 | 8 | 438 | 57 | 131 | 1 | 3 | 638 |

FIGURE 1. U.S. Department of Transportation Obligations, Fiscal Year 1981.

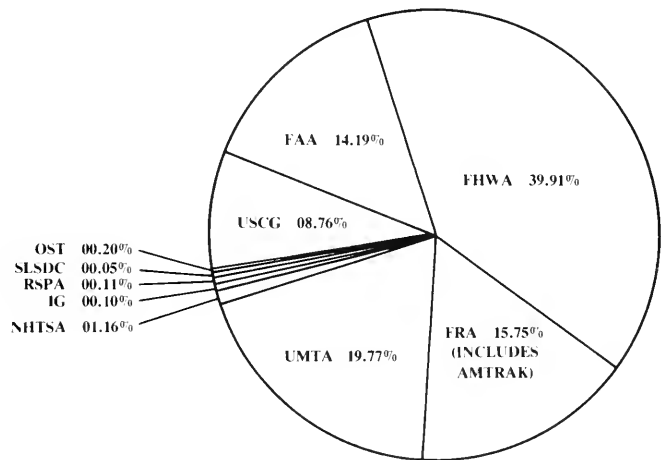


FIGURE 2. U.S. Department of Transportation Employment in Authorized Full-Time Permanent Positions, Fiscal Year 1981.

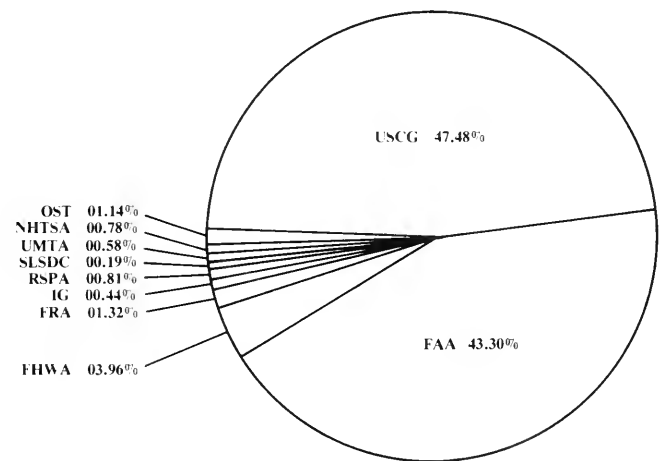


FIGURE 3. Relative Changes in U.S. Air Carrier Accidents, Passenger Fatalities, and Fatality Rate, Calendar Years 1971-80.

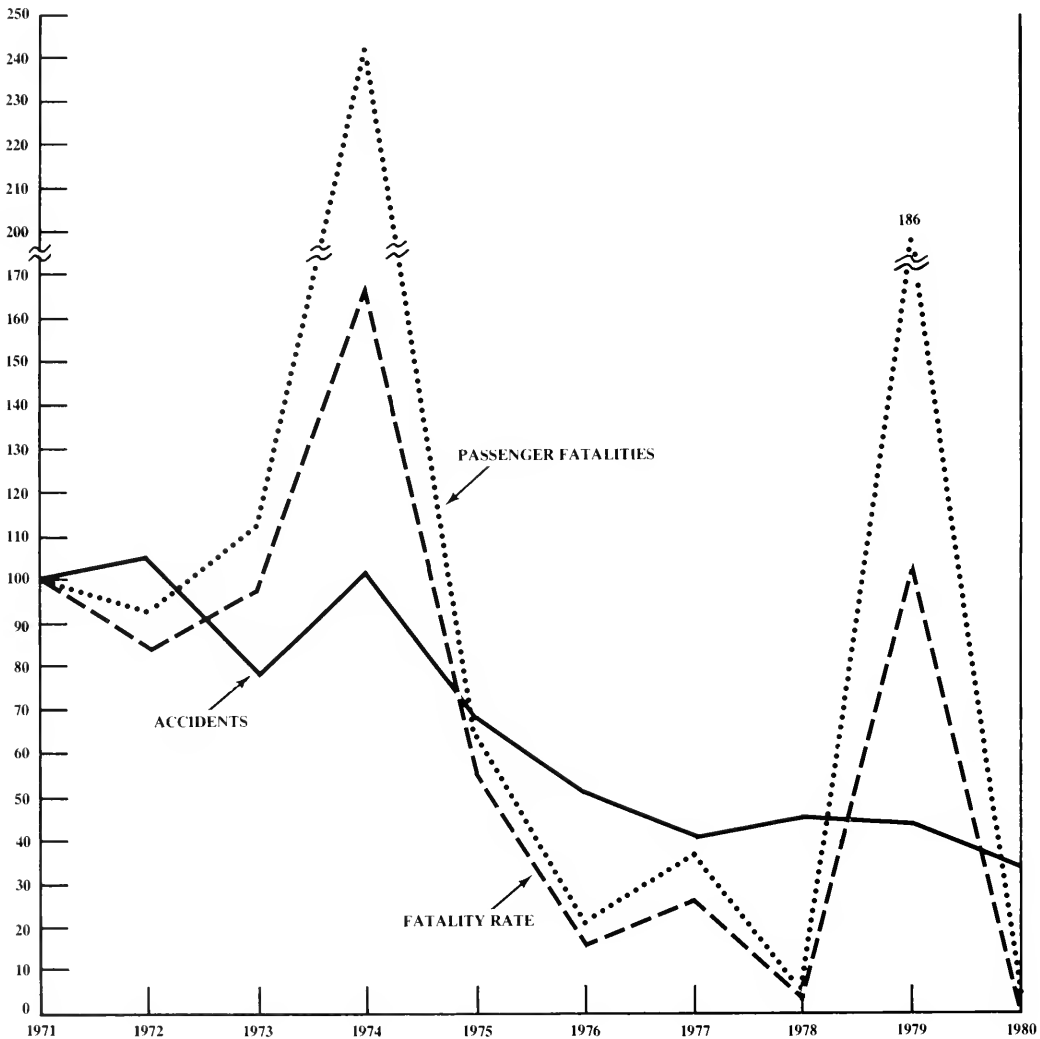


FIGURE 4. Relative Changes in General Aviation Accidents, Fatalities, and Accident and Fatality Rates, Calendar Years 1970-80.

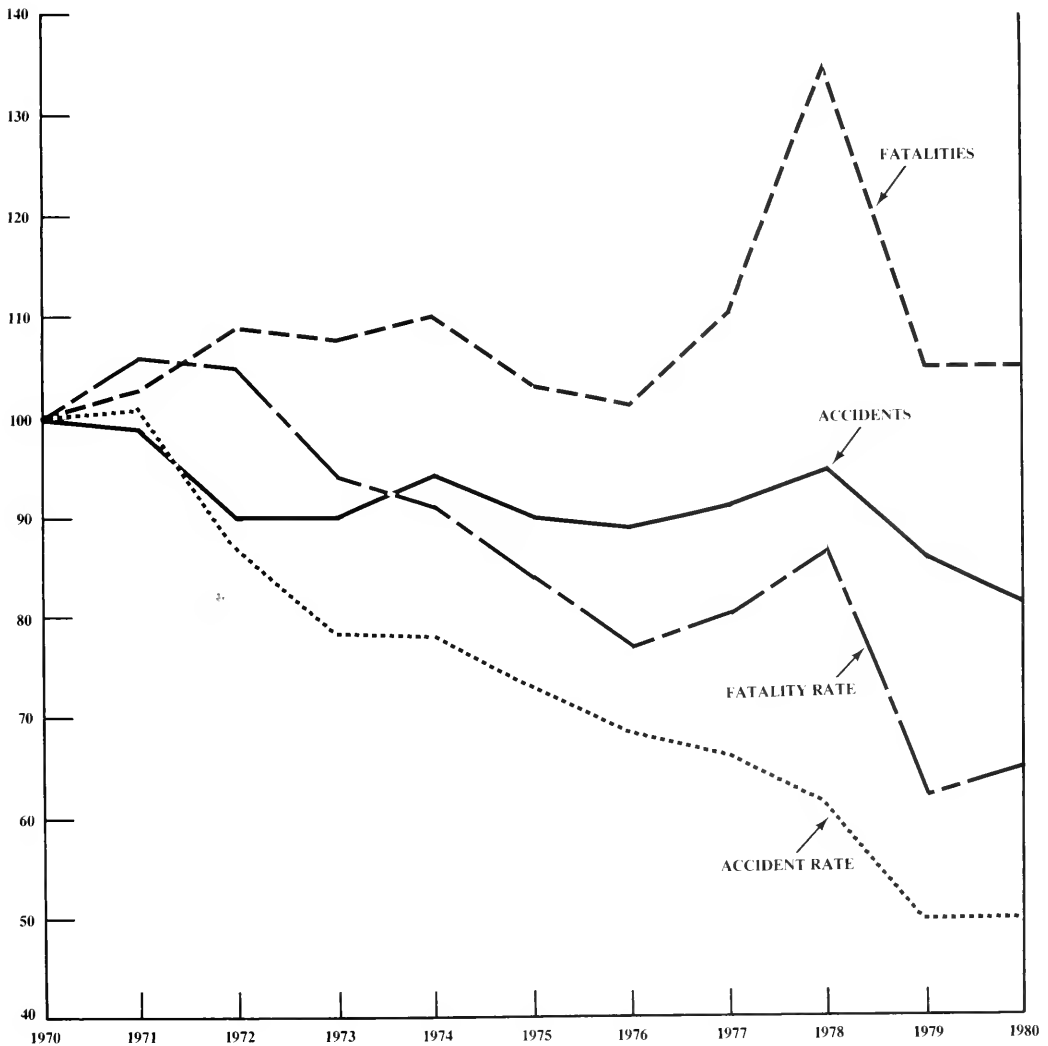


FIGURE 5. Relative Changes in Total and Interstate System Highway Obligations, Fiscal Years 1971-81.

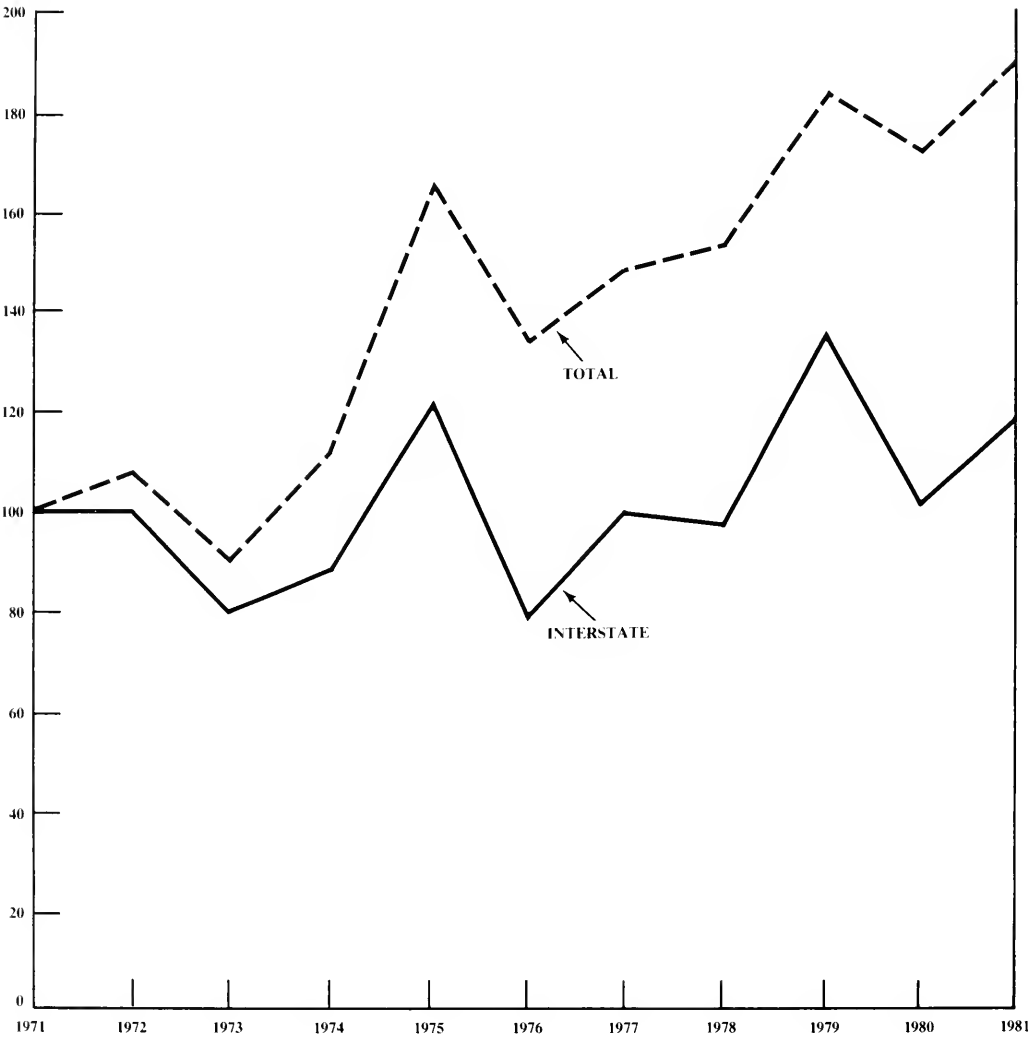
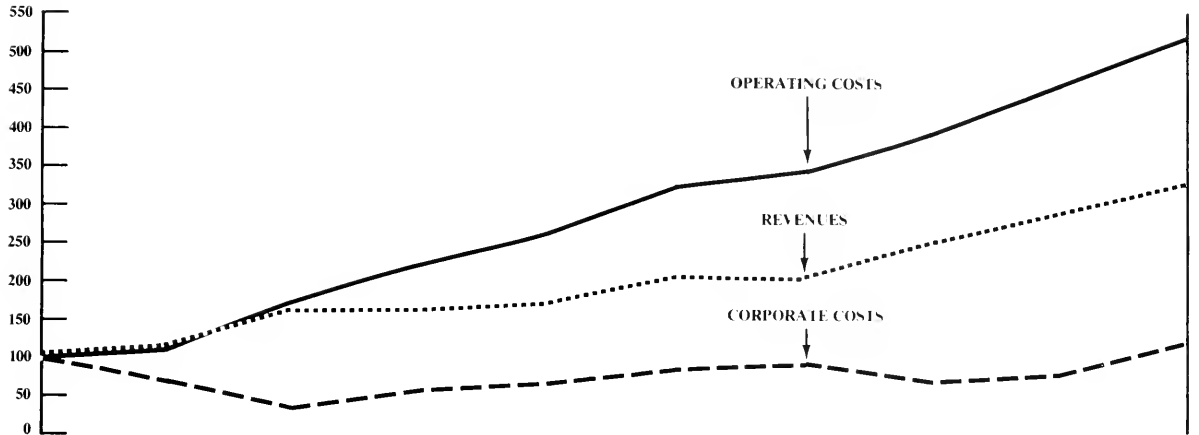
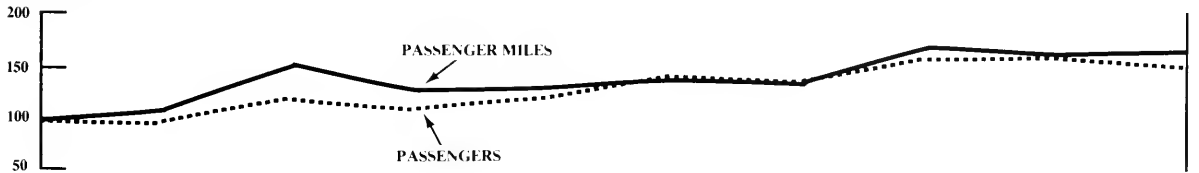


FIGURE 6. Relative Changes in Amtrak Costs, Revenues, Operations, and Performance, Fiscal Years 1972-81.

COSTS AND REVENUES



OPERATIONS



PERFORMANCE

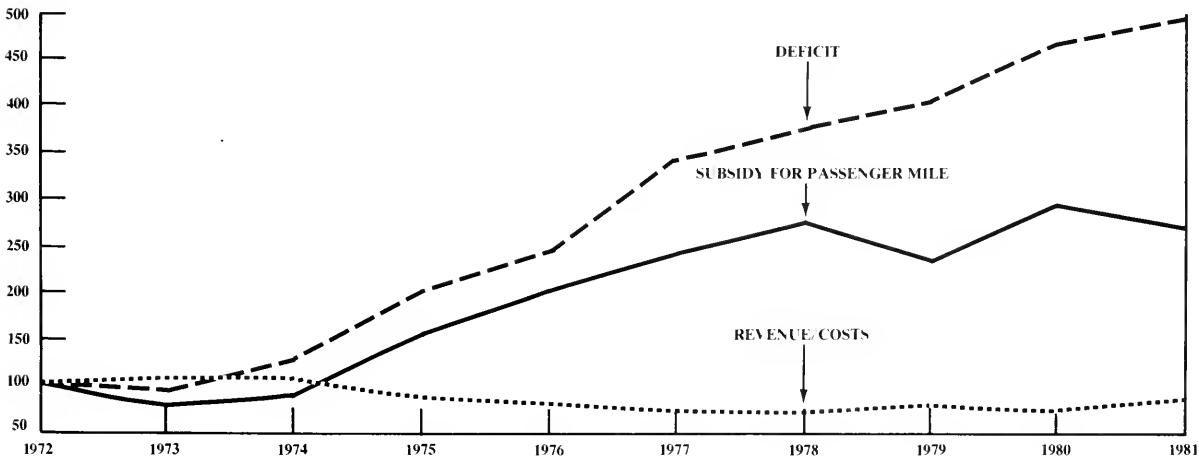


FIGURE 7. Relative Changes in U.S. Motor Vehicle Activities, Fatalities, and Fatality Rate, Calendar Years 1971-81.

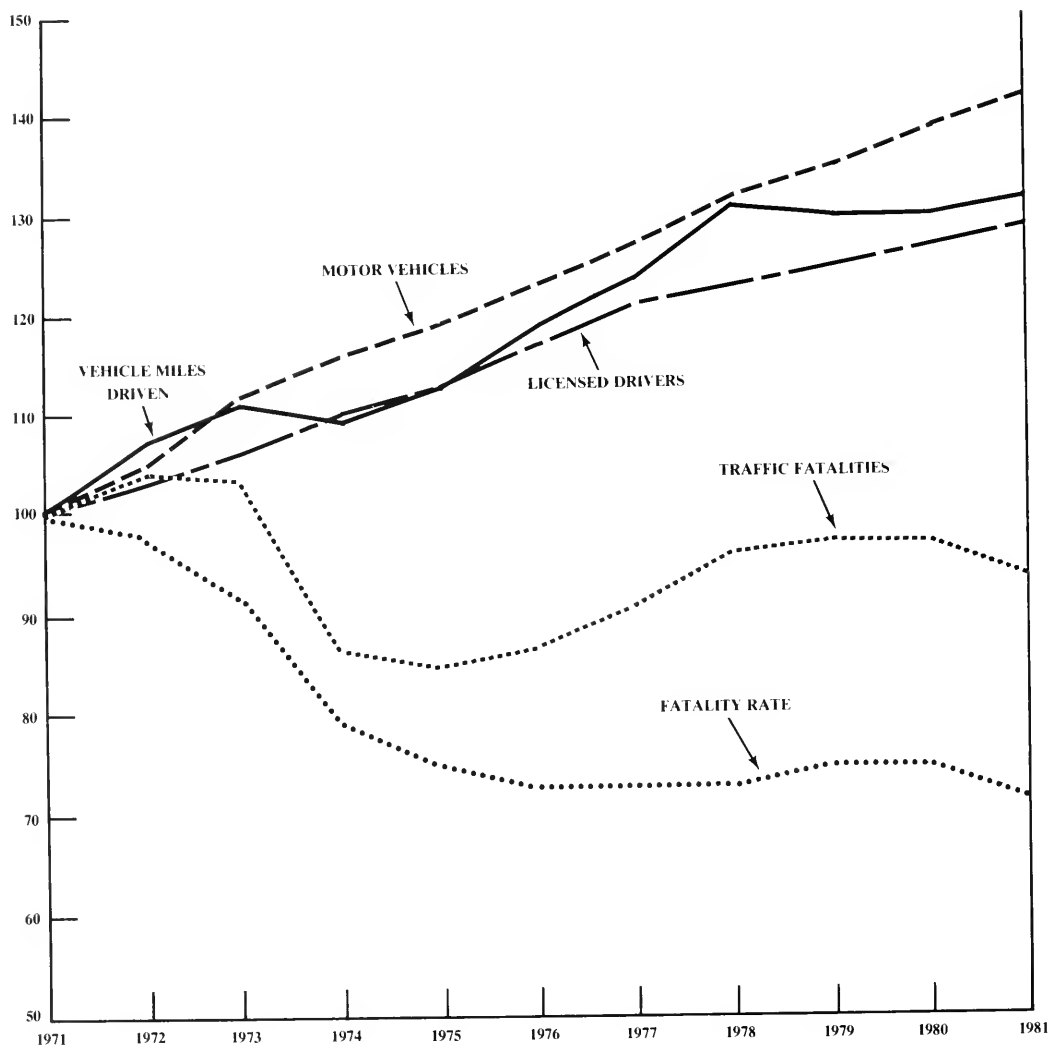


FIGURE 8. Relative Changes in U.S. Traffic Fatalities, Mileage, and Fatality Rate, Calendar Years 1979-81.

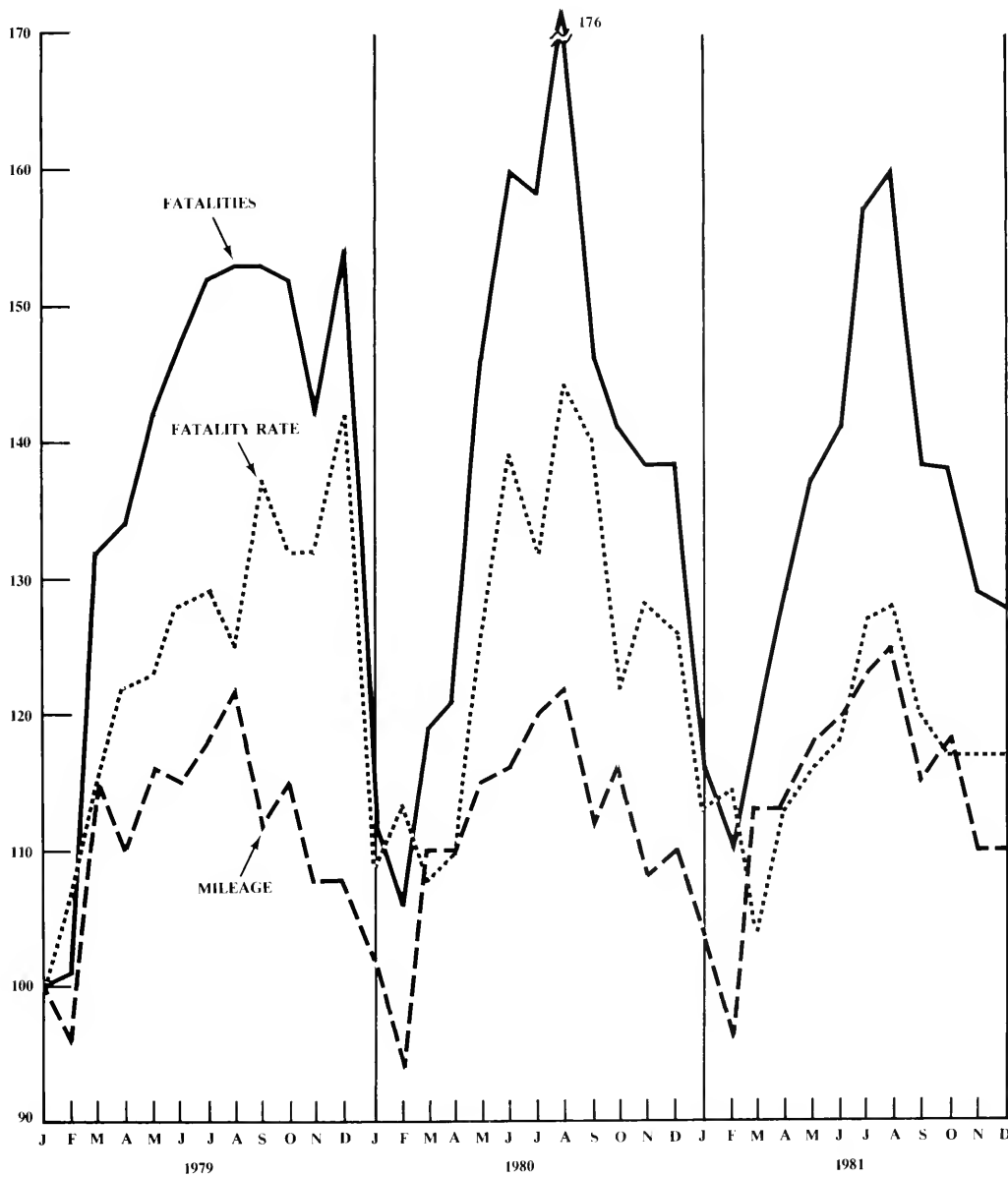
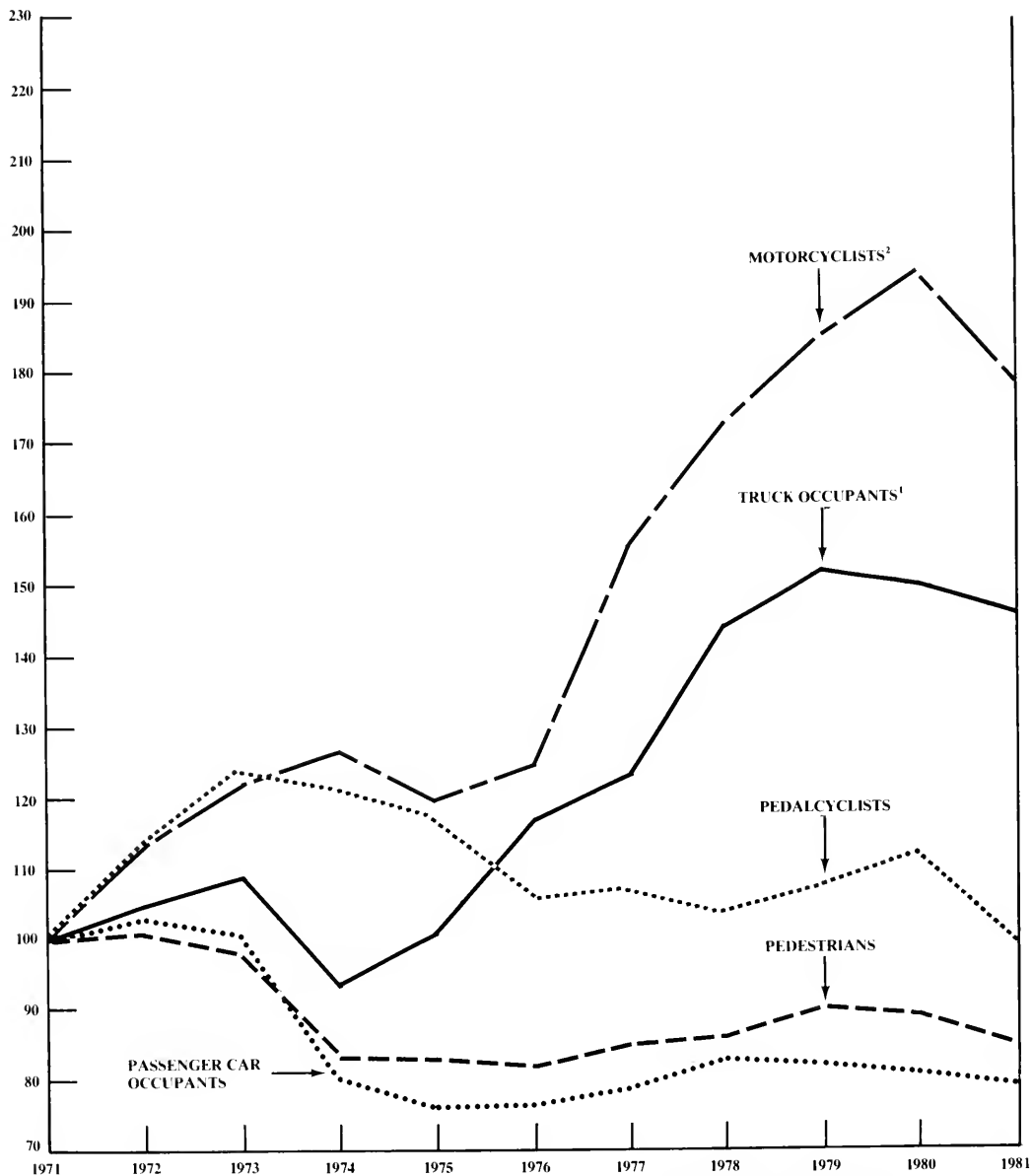


FIGURE 9. Relative Changes in U.S. Traffic Fatalities, by Principal Categories, Calendar Years 1971-81.



¹Includes pickups, vans, and heavy trucks.

²Includes mopeds, motorscooters, and motorbikes.

FIGURE 10. Relative Changes in Reported Gas Pipeline Failures and Casualties, Calendar Years 1970-80.

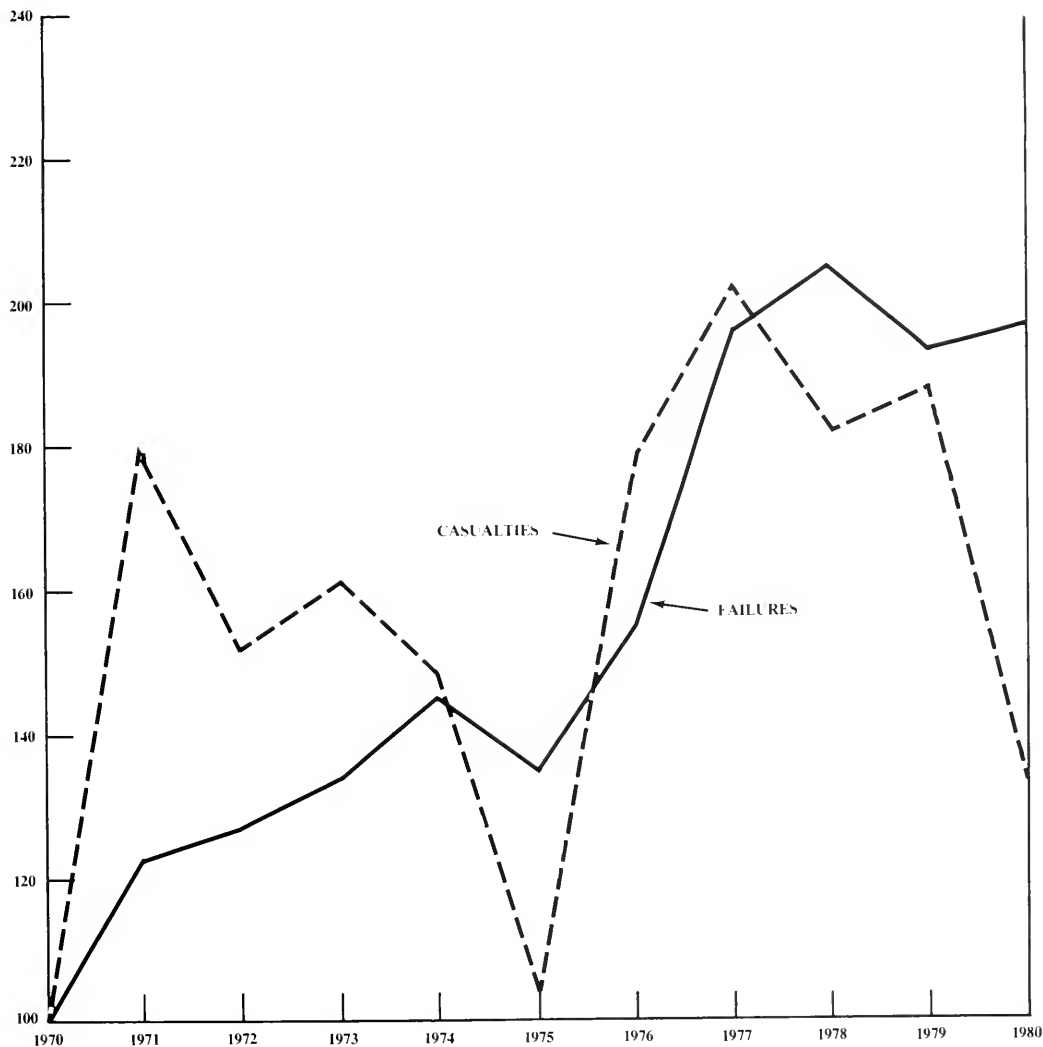


FIGURE 11. Relative Changes in Reported Liquid Pipeline Accidents and Casualties, Calendar Years 1970-80.

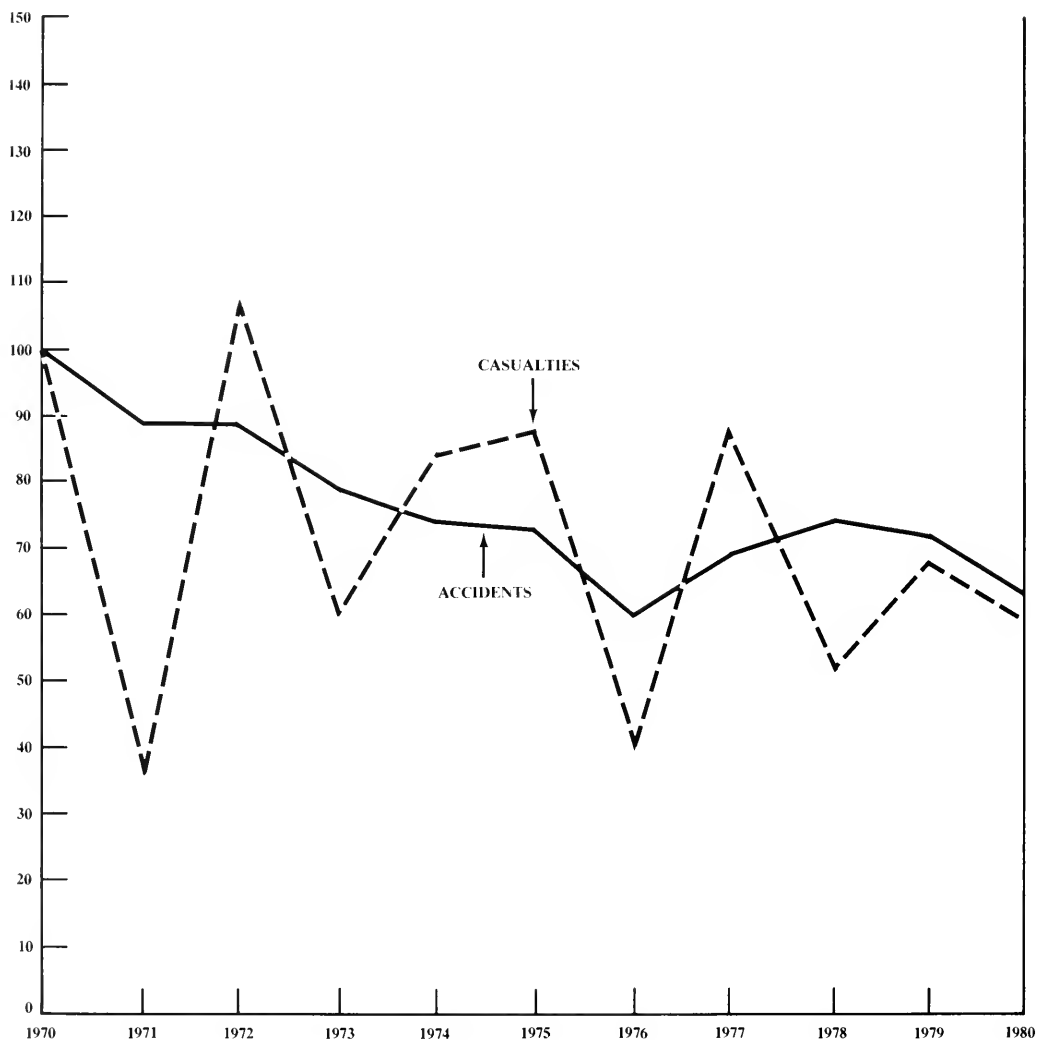


FIGURE 12. Relative Changes in Hazardous Materials Incidents and Casualties, Calendar Years 1971-80.

